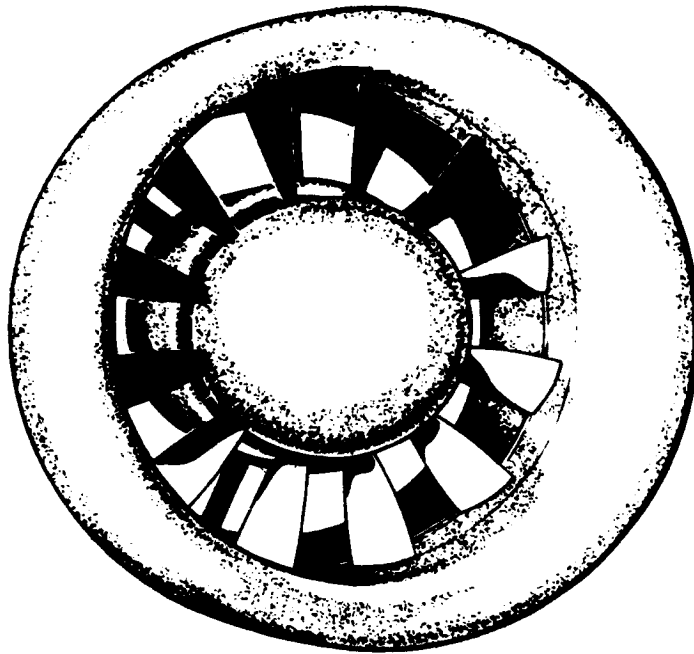


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NASA CR-132259

*Case - File copy*

*Noise and Wake  
Structure Measurements in a  
Subsonic Tip Speed Fan -  
Tabulation and Plots of Test Data*



by

B. Magliozzi B.V. Johnson

D.B. Hanson F.B. Metzger

July 23, 1973

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by

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PREPARED UNDER CONTRACT NO. NAS1-11670 BY

**Hamilton**  
**Standard**  
WINDSOR LOCKS, CONNECTICUT

DIVISION OF UNITED AIRCRAFT CORPORATION

**U**  
**A**®

FOR

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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## INTRODUCTION

This volume contains a detailed description and evaluation of the anechoic platform used during the test of a 0.457 m (18 in.) diameter Q-FanTM as part of NASA contract NAS 1-11670. Also included in this volume are: 1) 1/3 octave band analyses of the fan noise data, 2) narrow band analyses of the fan noise for selected test conditions, 3) narrow band sound power level data for all fan test conditions analyzed, and 4) the velocity and air angle evaluation of blade wake data.

Discussion of the test data contained herein will be found in a low-number NASA report of the same title: "Noise and Wake Structure Measurements in a Subsonic Tip Speed Fan."



## APPENDIX A

### ACOUSTIC FIELD CALIBRATION

Since the acoustic measurements were made over asphalt, an anechoic platform was used to reduce the reflections from the ground plane to better simulate free-field conditions. This platform, located mid-way between the source and the microphone, absorbed the reflected wave and prevented strong cancellations and reinforcements of the direct wave at the microphone.

The platform consisted of a plywood frame covered with 7.6 cm (3 in.) thick bats of fiberglass as shown in figures A-1 and A-2. In order to assess the effectiveness of this platform, an acoustic calibration was conducted in which a speaker was used as an acoustic noise source. For this calibration, the platform was located directly in front of a 50-watt capacity speaker. Two microphones (near microphone and far microphone) were located at the same height as the speaker with the near microphone positioned so the reflected wave would be at least 10 dB below the direct wave. This near microphone was used to determine the source noise while the far microphone measured the resultant noise due to both the direct and reflected wave. The speaker was tilted downward so its directivity indices in the direction of the direct wave and reflected wave were equal. This is shown in figure A-3 along with the locations of the microphones, platform, and speaker for the test.

Data recordings were made simultaneously for the 2.13 m (7 ft) and 7.62 m (25 ft) microphones on two single track Nagra III tape recorders, both with and without the anechoic platform. The data were analyzed by both 10 Hz narrow band filters and 1/3-octave band filters. Figure A-4 shows the narrow band analysis of the data from the 7.62 m (25 ft) microphone with and without the platform compared to the source noise measured at 2.134 m (7 ft). The results of 1/3-octave band analysis of the data are presented in figure A-5.

The data in figure A-4 show that the platform is very effective in reducing the interference field since the data without the platform show trough-to-peak heights of 10 dB or more while the data with the platform show excursions typically less than 2 dB. Figure A-5 shows the 1/3-octave band data corresponding to the narrow band data in figure A-4. It can be seen that the situation with the platform is improved and in general, the difference between measured and calculated free field levels with this platform installed is 2 dB or less.

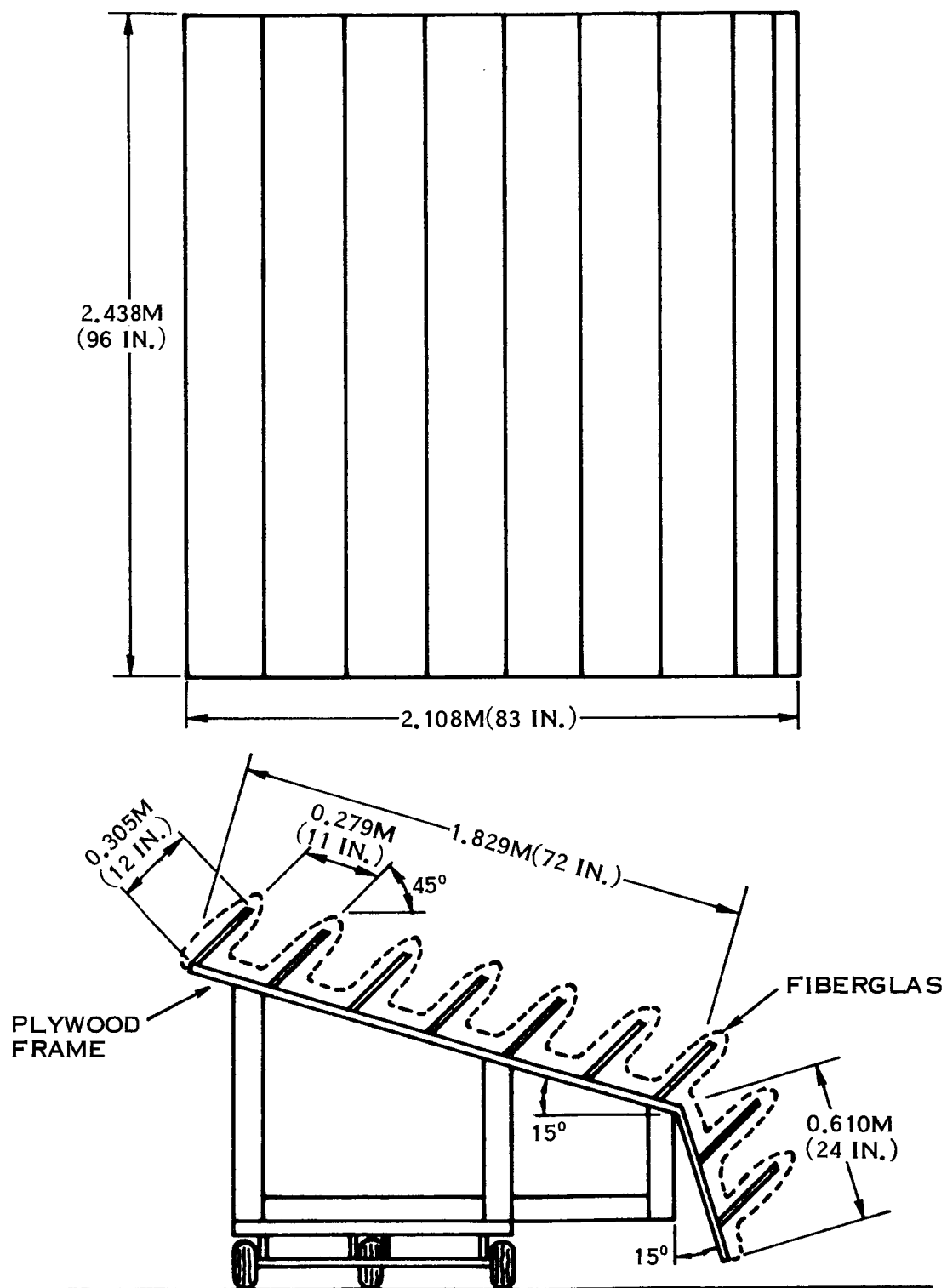
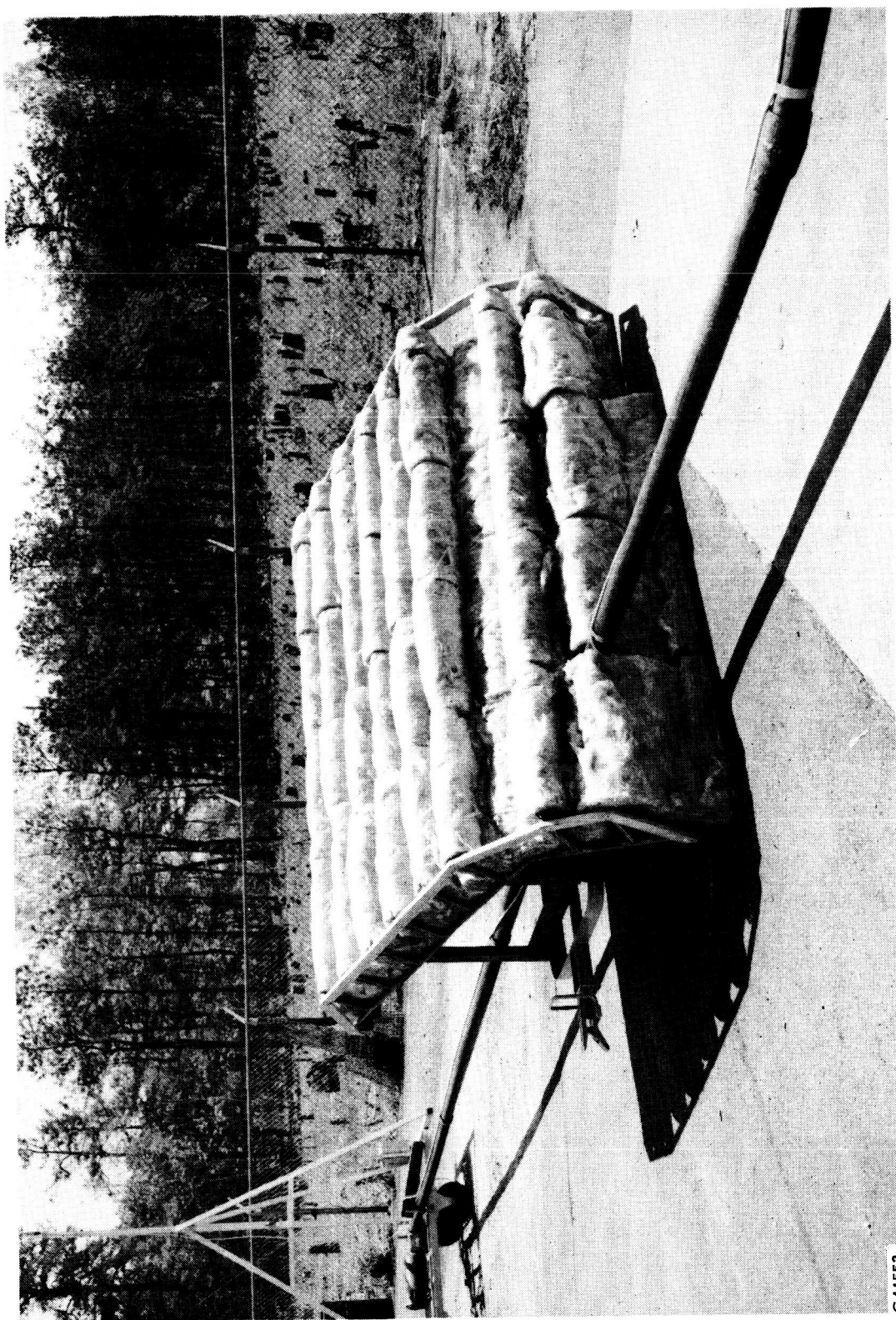


FIGURE A-1. ANECHOIC PLATFORM



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FIGURE A-2. ANECHOIC PLATFORM

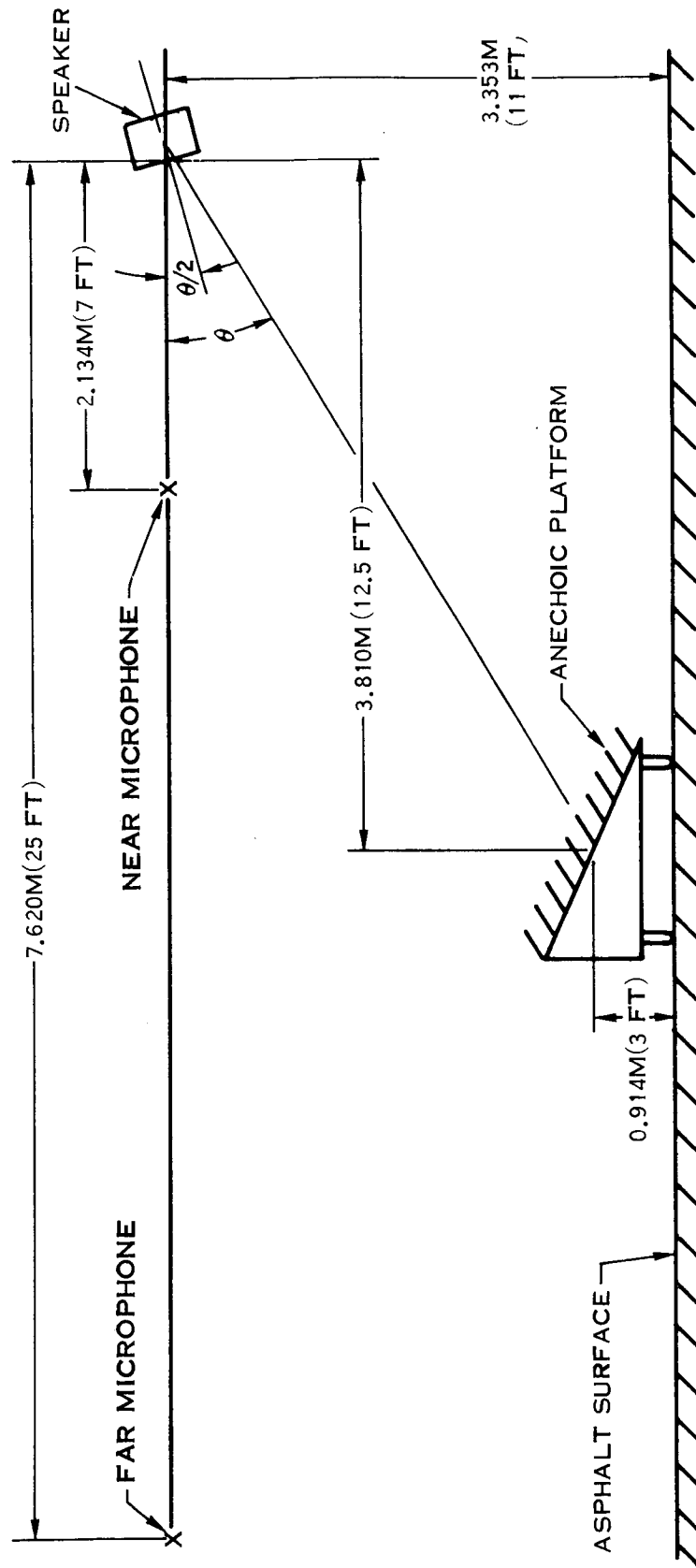


FIGURE A-3. ANECHOIC PLATFORM CALIBRATION

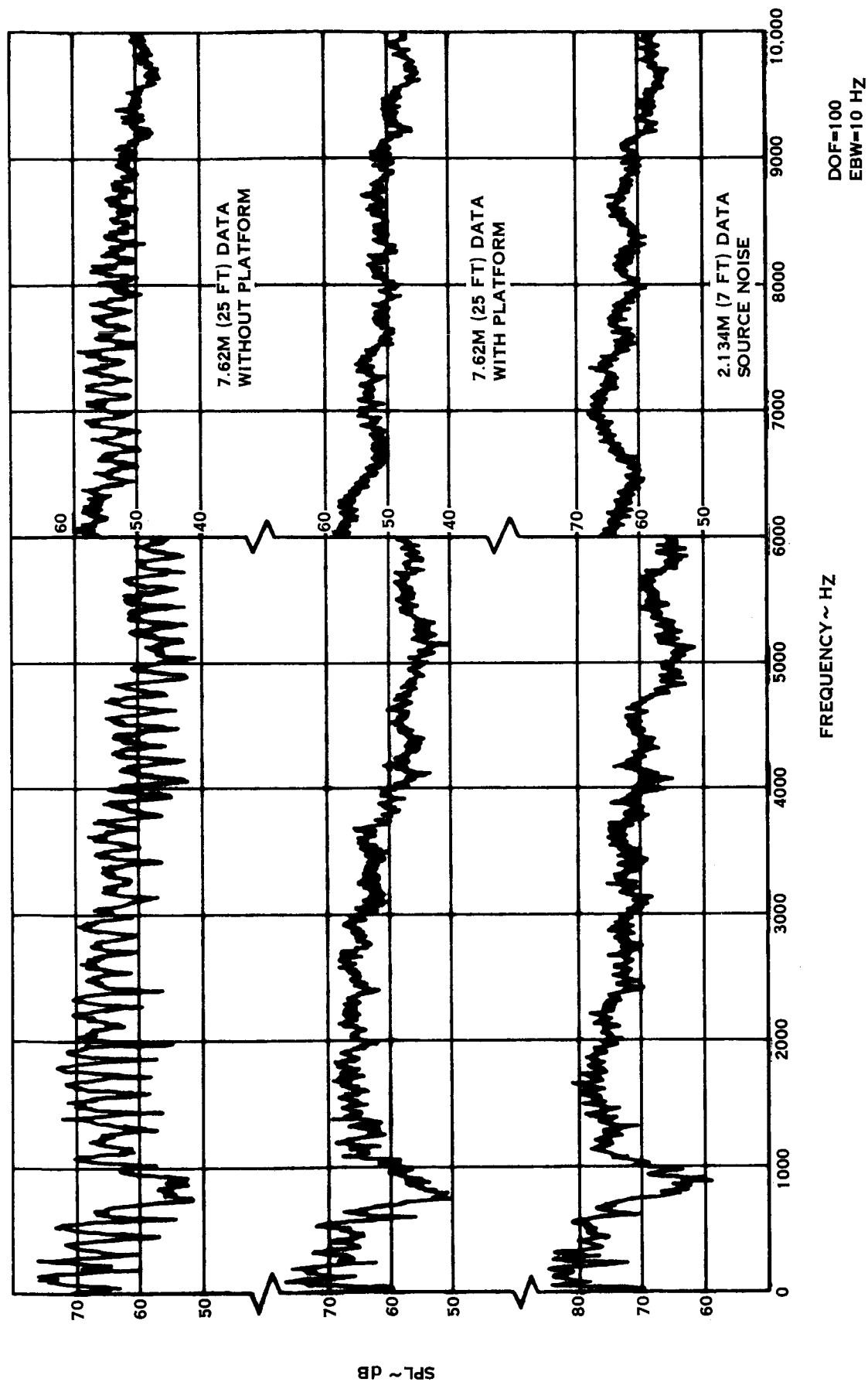
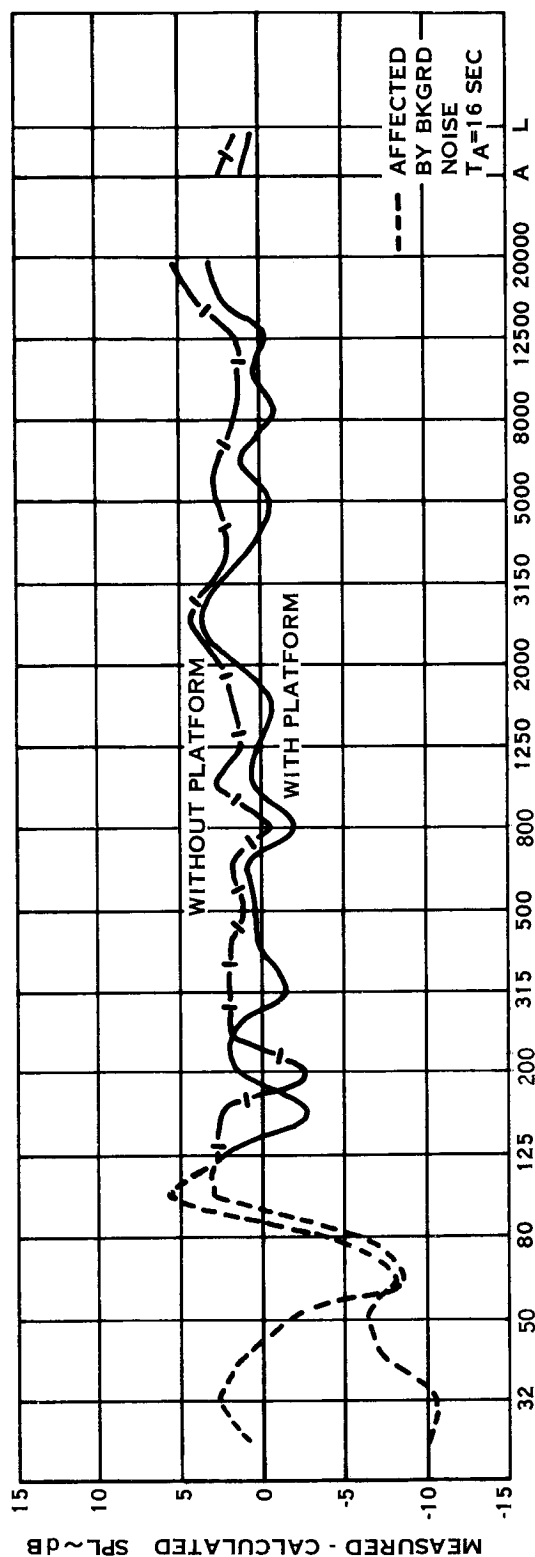


FIGURE A-4. ANECHOIC PLATFORM CALIBRATION

FIGURE A-5. ANECHOIC PLATFORM COMPARISON CURVE



## APPENDIX B

### ONE-THIRD OCTAVE BAND SOUND PRESSURE LEVEL DATA

The following pages contain the processed 1/3 octave band SPL's for all the fan operating conditions analyzed. The data for each condition consist of three pages. The first page presents the raw, uncorrected data as processed through the analyzer. The second page presents the data corrected for excess atmospheric attenuation and the calculated PWL's for those data. Also shown are the calculated PWL's on a sideline and constant radius assuming standard day excess atmospheric attenuation. Finally, the third page presents the data scaled to a thrust of 66720 N (15,000 lb) at a 152m (500 feet) sideline distance.





RUN 002 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 6639 RPM DATE 11/27/72 TIME 11-47-13

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1428. N ( 321. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 18.3 C ( 65.0 F) , TEST RELATIVE HUMIDITY = 38.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	68.0	68.2	67.5	68.2	70.0	70.7	72.0	73.7	74.7	76.7	76.5	79.5	80.0	79.7	76.7	79.7
63	68.2	68.5	67.7	68.7	70.0	69.7	71.0	71.7	73.2	75.0	76.0	79.5	80.0	79.0	78.7	81.7
80	70.0	69.7	69.7	70.0	70.7	71.7	72.2	74.5	76.5	78.2	79.0	82.0	82.0	83.0	82.7	83.2
100	74.0	74.2	74.2	75.0	75.7	77.0	77.7	79.5	80.5	82.0	83.0	85.0	85.2	85.2	84.0	83.7
125	74.7	74.7	75.0	75.7	77.2	78.5	78.7	79.7	80.5	81.5	81.7	84.2	84.0	83.2	82.7	83.5
160	74.2	74.5	75.2	75.5	76.7	77.0	77.7	78.5	79.0	79.7	80.0	81.0	81.2	80.7	82.0	83.5
200	79.0	79.0	79.2	79.7	79.5	79.7	79.5	79.7	80.2	81.0	81.5	82.5	83.0	83.0	84.5	85.5
250	79.2	80.0	80.5	79.7	79.0	79.2	78.7	78.7	79.5	80.5	81.7	83.0	83.0	82.7	83.2	83.5
315	77.0	77.0	78.0	77.5	78.0	79.0	79.5	79.5	79.5	80.0	81.0	80.7	81.0	82.0	82.7	82.7
400	76.5	76.0	76.5	76.7	78.0	78.2	78.0	78.5	78.7	79.0	79.0	80.0	79.7	80.2	80.7	81.2
500	76.7	76.5	77.7	78.7	79.5	79.0	79.5	78.7	79.0	80.0	80.2	80.2	80.0	80.0	81.2	81.2
630	77.0	77.5	78.7	79.0	79.2	78.5	79.0	79.2	79.7	80.0	81.0	81.0	81.2	81.0	81.0	80.7
800	79.7	80.2	80.5	80.2	80.0	79.5	80.0	80.0	81.0	81.5	81.5	81.7	82.5	82.0	81.7	81.2
1000	81.0	80.7	81.0	81.5	81.2	81.5	81.2	81.0	82.2	82.7	83.7	83.7	84.0	83.5	82.5	81.2
1250	89.2	86.5	88.0	91.0	87.5	90.2	87.5	85.2	85.2	84.5	91.5	90.5	98.2	99.2	96.2	90.5
1600	82.5	82.0	83.0	83.5	82.7	84.2	83.5	83.5	83.5	83.2	85.0	85.2	88.5	89.0	86.7	82.7
2000	80.7	82.0	82.0	82.0	82.2	82.7	83.2	82.7	82.5	83.0	84.5	85.0	86.2	85.5	83.0	80.7
2500	83.2	85.0	86.0	87.5	84.7	84.5	83.7	83.0	84.2	84.7	87.2	88.5	90.5	89.5	87.2	84.5
3150	81.0	81.0	82.0	82.5	82.2	82.2	82.0	82.0	82.2	83.2	84.2	86.0	87.0	85.0	83.7	81.0
4000	83.0	81.2	82.5	82.7	81.5	83.0	83.5	82.2	81.7	82.2	83.5	85.0	87.0	84.7	84.2	79.5
5000	81.0	81.5	81.5	82.0	82.2	81.5	82.0	81.7	83.0	82.7	84.5	84.5	85.5	85.0	83.0	79.5
6300	80.2	81.2	81.5	80.7	81.5	80.5	81.2	81.2	81.5	82.2	83.0	83.7	84.7	83.2	83.0	79.7
8000	80.0	79.5	79.5	79.0	79.2	79.0	79.0	78.5	78.2	79.5	80.5	81.7	82.2	82.0	80.5	76.5
10000	78.5	77.5	78.7	78.7	78.2	78.5	78.2	76.7	76.7	77.2	79.0	80.5	82.0	81.2	80.0	75.0
12500	74.7	75.5	76.5	76.5	77.0	76.2	75.7	75.0	74.2	75.0	77.2	78.0	79.5	78.7	76.7	72.7
16000	74.2	74.7	75.2	75.5	75.7	75.0	74.5	73.7	73.7	74.2	75.7	77.0	78.0	78.0	76.0	71.5
20000	71.0	72.5	72.7	72.7	73.5	73.0	72.2	71.5	71.5	72.0	73.2	74.5	75.5	75.0	73.0	68.7
25000	68.7	69.5	70.5	70.7	70.7	70.7	69.7	68.7	68.5	69.2	70.7	71.7	73.0	73.0	70.5	66.5
31500	65.2	65.7	67.0	67.2	67.0	66.7	66.0	65.0	64.7	65.5	67.5	68.7	70.0	69.2	67.2	63.7
40000	61.7	62.2	62.7	63.0	63.2	62.7	62.5	61.7	61.2	62.0	63.2	65.5	66.5	66.2	64.0	61.0
DB(A)	92.7	92.7	93.7	94.2	93.2	94.0	93.5	93.0	93.0	93.5	95.2	96.0	99.7	99.7	97.2	93.2
DB(L)	94.0	94.0	94.5	95.7	94.5	95.2	94.5	94.2	95.0	95.2	97.0	98.0	101.0	101.2	99.2	98.0
IDENT	472	471	470	469	468	467	466	465	464	463	462	461	460	459	458	457

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2371. N ( 533. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 16.1 C ( 61.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	68.2	69.0	70.5	72.7	73.7	74.7	76.7	77.5	78.0	81.7	78.2	79.2	79.5	80.0	80.0	80.5
63	70.2	71.0	71.5	72.2	73.5	73.5	74.5	75.2	76.5	80.5	78.0	80.7	82.2	83.7	83.5	84.5
80	72.7	72.7	73.7	74.0	74.7	75.7	77.2	79.5	80.7	83.0	83.2	85.0	86.2	87.2	88.0	86.7
100	78.0	78.5	79.0	79.7	80.7	82.0	82.7	84.2	85.2	87.0	88.0	89.2	90.2	90.0	89.7	88.5
125	80.0	80.0	81.0	82.0	83.0	84.2	85.0	86.0	86.5	86.7	87.0	88.0	89.0	88.2	88.0	88.0
160	79.0	79.0	80.0	81.2	81.7	82.5	83.5	83.7	84.7	86.0	86.2	87.2	87.5	88.7	89.7	90.0
200	82.0	82.0	82.2	82.7	82.7	83.0	83.7	85.0	86.5	87.0	88.2	89.2	89.7	91.2	92.5	92.7
250	87.5	87.7	87.5	86.5	85.7	85.7	86.0	87.2	88.0	89.5	90.5	91.0	91.2	91.5	92.2	93.5
315	96.5	86.2	86.0	86.0	86.5	86.7	86.2	87.2	87.5	88.2	89.0	89.5	90.2	91.0	91.5	91.7
400	94.5	85.0	85.0	86.7	87.0	86.7	86.2	86.5	87.0	87.5	88.0	87.7	89.0	90.0	90.2	91.0
500	85.5	85.5	86.2	86.5	86.5	86.7	86.5	86.7	87.2	88.2	88.0	87.5	87.7	88.5	89.2	89.5
630	86.5	86.5	86.5	87.2	87.0	86.5	86.5	87.0	87.2	88.0	88.0	88.5	88.7	88.7	89.0	89.2
800	85.0	85.7	87.0	87.5	88.0	87.5	88.2	88.2	88.2	88.2	89.2	89.5	90.0	90.2	89.2	89.0
1000	84.5	85.0	86.5	88.0	88.0	88.0	88.5	88.5	89.0	90.0	90.2	90.7	91.2	91.0	90.0	88.5
1250	85.0	85.5	86.5	88.2	88.5	88.5	89.2	89.5	89.7	90.2	91.0	91.2	91.7	91.0	90.0	88.2
1600	92.0	90.5	90.5	91.0	96.2	98.2	98.7	99.0	100.0	96.0	95.5	99.5	101.5	100.5	97.0	91.5
2000	91.7	90.7	91.0	91.0	95.7	97.5	98.2	98.5	99.2	95.5	95.5	99.0	101.0	100.0	96.5	90.5
2500	87.0	87.7	89.0	90.0	90.0	89.7	89.5	89.5	90.5	91.0	92.5	93.2	93.0	91.7	89.7	87.0
3150	88.5	92.2	90.0	90.0	90.2	89.7	90.5	90.2	92.5	91.7	92.7	94.2	95.0	93.2	90.2	88.0
4000	87.2	90.2	89.0	88.7	89.7	88.7	89.5	89.5	90.7	91.0	91.5	92.5	93.2	92.5	89.7	87.0
5000	87.2	86.5	90.0	89.2	90.0	90.5	91.7	90.7	91.2	91.0	91.0	93.0	95.5	93.0	90.0	86.7
6300	88.0	86.5	87.7	87.7	91.0	90.2	89.5	89.7	90.2	90.7	91.7	91.5	92.5	91.0	89.0	85.0
8000	86.5	85.7	87.2	87.2	89.0	88.5	88.5	89.0	88.7	89.5	91.2	90.2	91.7	90.2	87.2	83.5
10000	85.7	85.2	87.2	87.0	87.2	85.7	86.2	85.5	86.2	88.2	89.2	89.2	90.5	88.7	86.5	82.2
12500	82.0	82.7	83.0	84.5	85.5	85.0	85.0	85.0	84.2	85.5	87.2	87.5	88.2	87.7	84.5	80.2
16000	81.2	81.2	82.0	82.2	83.5	83.0	83.5	83.2	83.2	84.7	85.0	86.5	88.0	86.5	83.5	79.5
20000	78.7	79.5	80.0	80.7	81.0	80.5	80.7	80.5	80.7	81.5	82.5	84.0	85.0	84.2	81.0	77.0
25000	75.7	76.0	77.5	78.2	78.2	78.0	78.2	78.0	78.2	79.0	80.2	81.5	83.0	82.0	79.2	75.0
31500	72.2	72.2	73.5	74.0	74.7	74.5	74.2	74.2	74.5	75.7	77.2	78.5	79.5	78.5	75.7	71.7
40000	58.2	68.2	69.5	70.0	70.2	70.7	70.0	70.5	70.5	72.0	73.5	74.5	76.0	75.2	72.0	68.2

DR(A) 99.2 99.5 99.7 100.0 102.5 103.0 103.7 103.5 104.7 103.0 103.0 105.2 106.7 105.5 102.2 99.0

DR(L) 100.5 100.5 100.5 101.0 103.2 104.0 104.0 104.5 105.2 104.5 104.5 106.2 106.2 107.7 107.0 104.5 103.2

IDENT 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29

RUN 006 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7881 RPM DATE 11/27/72 TIME 11-47-19

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2042. N ( 459. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 16.1 C ( 61.0 F ) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	67.5	68.7	69.7	71.7	72.5	74.7	75.2	76.0	77.0	77.2	77.2	77.7	77.2	77.7	79.0	78.7
63	69.0	69.5	70.0	71.7	72.5	73.0	73.0	74.7	75.0	76.7	77.2	78.5	80.2	81.2	82.0	82.2
83	71.7	71.0	71.7	72.7	73.5	74.5	75.5	77.7	79.0	80.7	82.2	83.2	85.0	86.2	85.7	84.7
100	75.7	75.7	77.0	78.7	79.2	80.5	82.0	82.0	83.5	85.0	85.0	86.2	87.5	87.7	87.5	86.7
125	77.7	77.5	78.0	79.7	81.0	82.2	83.2	84.5	85.5	86.2	85.7	86.5	87.2	86.2	85.7	86.5
160	77.0	77.0	77.7	78.2	79.5	80.2	80.7	82.0	82.7	83.2	83.7	84.0	84.2	85.2	86.7	88.2
200	81.0	81.2	81.5	82.0	81.7	82.0	82.0	82.5	84.2	84.7	85.2	86.0	86.7	88.0	89.2	89.5
250	85.2	85.5	85.2	85.5	84.5	83.7	83.7	83.5	84.7	86.2	87.5	88.0	88.0	87.5	88.0	98.0
315	83.0	83.0	82.5	83.0	83.5	83.7	84.2	84.7	85.0	84.7	85.7	86.0	86.5	87.7	88.0	88.0
400	80.7	81.2	81.2	83.0	84.5	83.5	83.7	84.0	83.7	83.7	84.7	84.5	85.0	85.5	86.7	86.7
500	81.5	81.7	83.2	83.7	84.0	83.7	83.7	83.7	83.7	84.5	85.0	85.0	85.0	85.5	85.7	85.7
630	83.2	83.2	83.5	84.0	84.0	83.5	83.5	84.2	84.5	85.0	85.0	86.0	86.0	85.7	86.0	86.0
800	84.2	84.5	84.2	84.5	84.2	85.0	84.7	84.7	85.5	85.7	85.7	87.0	87.7	87.2	86.5	86.5
1000	82.7	83.0	84.2	85.2	86.0	85.5	85.0	85.5	86.2	87.2	87.2	88.5	88.2	88.0	87.0	86.0
1250	83.0	83.5	84.7	85.7	86.5	87.7	86.7	88.2	87.7	89.0	90.5	90.5	89.7	89.5	88.7	86.5
1600	94.2	93.0	90.7	91.2	94.0	101.5	95.0	101.5	99.7	102.5	105.0	105.2	102.0	101.7	101.0	95.7
2000	86.7	87.5	87.5	87.0	87.2	88.5	87.5	89.0	88.5	90.0	90.7	91.5	90.5	90.5	88.7	86.2
2500	86.2	86.5	87.0	87.0	86.7	87.0	86.5	87.2	87.2	88.0	88.5	90.0	89.7	89.2	87.5	84.5
3150	87.5	90.5	91.7	92.7	87.7	88.0	89.0	88.0	88.5	89.5	90.7	90.7	94.5	91.0	90.2	85.7
4000	84.2	85.0	85.7	86.5	86.2	85.7	85.5	86.0	86.0	86.5	87.5	89.0	89.7	88.5	86.2	84.2
5000	85.5	87.0	86.0	88.5	88.0	86.5	87.7	88.7	87.2	88.5	88.0	89.2	89.2	88.7	87.2	83.7
6300	89.0	84.5	86.2	89.5	86.7	86.5	87.2	87.5	88.5	88.2	88.5	89.0	90.2	88.0	87.2	84.5
8000	83.2	84.5	83.5	85.2	84.7	84.5	86.2	86.5	86.0	86.2	87.0	87.5	88.7	86.7	85.5	80.7
10000	85.0	81.5	83.0	83.7	83.5	83.7	83.5	82.2	83.0	83.5	84.7	87.0	86.5	87.0	84.7	79.5
12500	79.7	90.5	82.0	81.0	81.7	82.2	81.5	81.0	81.5	82.5	82.5	83.7	85.0	85.0	82.5	77.2
16000	78.5	79.5	82.0	80.7	80.5	81.0	81.5	79.5	79.2	80.5	81.5	83.7	84.2	83.5	81.2	76.5
20000	76.5	77.2	78.5	78.0	78.5	78.0	77.5	77.5	77.2	78.2	78.7	81.0	82.0	81.0	78.7	74.0
25000	73.5	74.0	74.5	76.0	75.2	76.0	75.7	74.2	74.2	75.5	76.7	78.0	79.0	78.7	76.0	72.0
31500	69.7	70.0	71.0	71.5	72.0	71.7	71.7	70.5	70.7	71.7	73.5	74.2	76.2	75.5	72.2	69.0
40000	65.7	66.2	67.0	67.7	68.0	67.5	67.7	67.0	67.2	68.5	69.7	71.2	72.2	71.7	69.2	65.7
DB(A)	98.0	97.7	98.0	98.7	98.7	102.2	99.0	102.0	101.2	103.2	105.7	105.7	103.7	103.5	102.0	98.2
DB(L)	99.0	98.5	99.0	99.5	99.7	103.2	100.2	103.2	102.5	104.5	106.5	106.7	105.0	105.0	103.7	101.5
IDENT	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1450. N ( 326. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.7 C ( 53.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	64.2	65.7	66.7	68.2	69.0	71.2	72.0	73.2	73.7	74.2	75.5	74.0	75.5	76.0	75.2	75.2
63	65.2	66.5	66.7	68.2	67.5	69.0	70.5	71.2	73.0	74.0	75.5	76.5	77.7	79.2	79.7	79.2
80	67.7	67.7	67.7	68.7	69.5	70.7	71.7	74.0	75.7	78.0	78.5	80.7	81.7	83.5	83.0	82.0
100	72.0	72.2	73.2	74.0	74.7	76.5	78.0	78.7	79.7	81.5	82.2	83.0	83.7	84.0	83.2	82.0
125	74.0	74.5	74.7	76.0	76.2	77.7	78.7	79.5	81.0	81.5	82.2	83.0	83.2	83.2	82.5	82.2
160	74.5	74.0	74.7	75.5	76.5	77.5	77.5	78.0	79.0	79.2	80.0	80.0	79.5	81.0	82.0	83.5
200	78.2	78.2	78.7	79.2	79.0	79.0	79.5	79.7	80.2	80.7	81.5	82.2	82.0	83.0	84.0	84.2
250	81.0	81.0	81.0	80.5	80.0	79.5	79.2	79.5	79.7	81.0	82.7	83.0	83.7	83.0	83.5	83.5
315	77.5	77.0	78.0	77.7	78.5	78.7	79.2	80.0	79.7	80.0	80.2	83.7	81.2	81.7	82.0	82.7
400	77.2	77.0	76.7	77.7	78.5	79.0	78.5	79.0	79.0	79.0	80.0	79.7	80.5	80.5	80.5	81.5
500	77.2	77.5	78.5	79.2	80.0	79.5	79.2	79.2	79.5	79.7	80.0	81.0	80.0	80.7	81.5	81.5
630	77.5	78.7	79.0	79.5	79.7	79.5	79.2	79.5	80.0	80.5	80.7	81.5	81.0	80.7	81.2	81.2
800	79.7	80.0	80.0	80.5	80.0	79.7	80.2	80.5	80.5	81.2	81.7	82.2	82.7	82.2	82.0	81.5
1000	80.7	80.2	80.5	80.7	81.0	81.5	81.0	81.2	82.5	82.5	83.0	83.5	83.2	83.5	82.7	81.5
1250	80.7	83.0	85.7	87.2	86.5	82.2	85.7	84.7	87.0	85.7	86.2	87.0	85.2	85.7	88.0	84.5
1600	87.0	84.5	88.0	89.5	87.7	83.2	88.0	86.0	89.0	87.0	87.5	88.5	86.0	86.0	89.5	85.5
2000	81.7	81.7	82.2	82.0	82.2	83.0	83.0	83.0	83.0	83.2	84.0	84.5	85.5	85.2	83.2	81.5
2500	83.2	83.2	87.5	85.7	84.0	82.7	82.2	82.0	82.7	83.2	83.7	87.0	86.0	86.0	84.7	81.2
3150	83.2	84.0	89.7	87.5	85.0	83.2	82.0	82.7	82.7	83.5	84.0	88.0	87.0	86.5	85.7	81.7
4000	80.0	81.5	84.0	84.7	81.5	82.7	81.5	82.0	81.0	82.0	84.0	84.0	86.2	85.7	83.7	80.5
5000	80.2	80.2	82.0	83.5	82.0	81.5	83.0	82.5	82.2	82.5	83.5	83.5	85.0	84.0	82.0	79.0
6300	80.2	80.5	82.7	84.2	82.2	81.5	83.0	83.2	82.2	83.2	83.7	84.2	84.7	84.0	82.7	80.0
8000	90.2	80.0	80.5	80.7	81.5	79.0	79.0	79.0	78.5	79.7	81.2	84.0	83.0	82.2	81.2	77.2
10000	78.0	77.7	79.5	78.7	78.0	79.0	78.5	78.2	77.0	77.7	78.0	80.7	81.0	81.0	79.5	75.5
12500	75.2	77.2	77.0	78.2	77.2	77.5	77.0	75.7	74.7	76.2	77.0	78.5	80.0	79.7	78.2	73.7
16000	75.0	74.5	75.0	77.0	76.2	76.0	76.0	75.0	74.0	74.7	76.7	77.7	79.2	78.7	77.5	72.7
20000	71.0	71.7	73.0	74.0	73.2	73.2	73.2	72.2	71.0	72.5	74.2	75.0	76.5	76.2	74.5	70.5
25000	59.0	68.5	69.7	70.5	71.0	70.5	70.0	69.2	68.5	70.0	71.5	72.5	73.2	73.2	72.2	67.7
31500	64.2	64.2	65.5	66.7	66.2	66.0	66.0	65.2	65.2	66.0	67.2	69.2	70.0	70.0	67.7	64.5
40000	59.5	59.5	61.2	61.2	62.2	62.0	62.0	61.0	61.5	62.0	64.0	65.0	66.2	66.5	64.2	61.0
DB(A)	92.0	93.0	95.7	96.0	94.2	92.7	93.7	93.5	94.2	94.0	95.0	96.5	96.2	95.0	96.0	92.2
DB(L)	93.0	94.0	96.5	96.2	95.2	94.2	95.2	95.0	96.0	95.7	96.7	97.7	97.7	97.5	98.0	95.5
IDENT	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63

PUN 008 18-INCH Q-FAN 52.6 DEGREE BLADE ANGLE 8311 RPM DATE 11/27/72 TIME 11-47-28

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2024. N ( 455. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.7 C ( 53.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M																
	30	40	50	60	70	80	90	100	110	120	130	140	150				
50	66.0	67.0	68.5	69.7	71.5	74.0	74.7	76.0	76.5	77.2	77.5	78.5	78.7				
63	67.7	67.5	68.5	69.2	71.0	71.7	73.0	75.0	75.2	77.0	78.2	79.7	81.5	82.2	82.2	84.7	85.7
80	70.5	69.7	70.7	71.2	72.5	74.0	75.7	77.0	80.2	82.0	83.2	84.7	85.7	86.2	86.2	86.5	86.5
100	74.2	74.5	75.2	77.0	78.5	79.5	80.5	81.5	83.0	84.5	85.5	87.0	87.5	87.5	87.5	87.5	87.5
125	76.7	77.0	77.5	78.7	80.5	81.2	81.7	83.2	84.5	85.5	87.0	88.0	88.5	88.5	88.5	88.5	88.5
160	76.2	76.2	77.0	77.7	78.5	79.2	81.0	81.5	82.0	82.7	83.5	84.2	85.5	86.2	87.5	87.5	87.5
200	80.5	80.2	80.5	81.2	81.0	81.5	82.5	83.2	83.7	84.5	85.0	85.7	86.2	87.0	87.5	88.7	89.5
250	95.5	85.2	84.5	84.2	83.7	83.2	82.5	83.7	84.5	86.0	86.5	87.0	87.5	87.5	87.5	87.5	87.5
315	83.0	82.2	82.5	82.7	83.5	83.2	84.2	84.5	84.5	85.2	86.2	86.7	87.0	87.7	87.7	87.7	88.0
400	81.2	81.0	81.2	83.0	83.5	83.0	83.5	83.5	83.2	83.5	84.2	84.7	85.5	86.5	86.5	87.0	87.0
500	81.0	81.5	82.7	83.2	83.5	83.2	83.0	83.2	84.0	85.0	85.0	84.7	84.5	84.7	85.5	86.2	86.2
630	82.7	82.7	83.0	83.7	84.0	83.2	83.5	84.2	84.7	85.0	85.5	85.7	85.7	86.0	86.0	86.0	86.0
800	83.5	83.2	83.5	84.0	83.7	84.0	85.0	85.0	85.2	85.7	86.0	87.0	87.0	87.0	87.0	87.0	87.0
1000	81.2	82.2	83.2	84.5	84.7	84.5	84.7	85.5	86.2	86.5	87.0	87.0	87.0	87.0	87.0	87.0	87.0
1250	81.5	81.7	83.7	85.2	85.2	86.2	86.2	86.2	87.0	87.7	88.0	89.0	89.0	87.0	87.0	87.0	87.0
1600	86.7	87.7	86.2	89.7	88.7	88.7	97.2	90.5	95.2	97.5	96.7	97.5	100.0	99.2	93.5	85.5	85.5
2000	85.7	86.2	87.0	86.5	86.7	87.0	89.5	88.0	89.0	89.5	90.2	91.0	91.5	91.0	88.0	85.2	85.2
2500	84.7	85.2	86.5	86.7	85.7	86.5	86.2	86.5	87.2	87.7	88.5	89.2	89.5	88.7	86.7	84.5	84.5
3150	87.5	92.0	88.7	86.5	91.2	90.0	87.7	88.0	89.2	88.0	90.2	90.7	92.5	93.2	89.5	85.5	85.5
4000	83.0	84.7	85.7	85.7	86.0	85.2	85.2	85.2	85.7	86.2	87.5	88.0	89.2	88.5	86.5	83.5	83.5
5000	83.5	84.2	85.0	86.5	86.0	87.2	87.0	86.2	86.2	86.5	87.5	88.7	89.0	88.7	87.0	83.5	83.5
6300	88.2	85.2	88.0	86.7	87.5	87.2	86.7	87.0	87.7	88.0	88.2	89.0	90.0	88.5	87.0	84.2	84.2
8000	84.0	83.2	82.7	84.7	85.2	86.5	85.5	84.2	83.7	85.0	85.5	87.7	87.7	84.2	84.2	80.7	80.7
10000	80.5	81.0	82.7	82.0	84.0	83.2	82.0	82.2	82.0	83.0	84.0	85.5	86.7	86.2	84.2	79.7	79.7
12500	79.2	79.7	80.5	80.7	81.0	80.7	80.5	80.5	81.5	82.5	84.0	85.0	85.0	84.2	82.2	77.5	77.5
16000	76.2	78.2	78.5	79.7	80.0	80.0	79.5	79.2	80.2	81.2	83.0	84.7	84.7	81.2	77.2	72.2	72.2
20000	75.0	75.5	76.7	77.2	77.2	77.7	76.5	77.0	77.2	77.7	80.2	81.7	81.7	78.7	74.2	72.2	72.2
25000	71.5	72.2	73.0	74.0	74.2	74.0	74.5	74.2	75.0	76.5	78.0	78.7	78.7	76.2	72.2	69.2	69.2
31500	68.0	68.0	69.0	69.5	70.2	70.7	71.0	70.2	71.5	73.2	74.5	75.2	74.7	72.5	69.2	65.7	65.7
40000	53.7	63.7	65.0	65.5	66.2	66.0	66.2	66.2	67.2	68.2	69.5	71.7	71.2	69.0	65.7	65.7	65.7
DB(A)	96.0	96.7	96.7	97.0	97.7	98.0	99.7	97.7	99.2	100.0	100.5	102.0	102.5	102.0	98.7	95.5	95.5
DB(L)	96.7	97.5	97.7	98.0	98.5	99.0	100.5	98.7	100.5	101.2	102.0	103.5	103.0	101.5	99.5	99.5	99.5
IDENT	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	86

R/JN 009 18-INCH O-FAN 52.6 DEGREE BLADE ANGLE 8895 RPM

DATE 11/27/72 TIME 11-47-31

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2344. N ( 527. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 11.7 C ( 53.0 F ) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ.	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	56.5	67.2	69.2	71.5	73.5	74.5	75.7	76.0	77.2	78.0	78.0	78.7	78.7	79.0	79.7	80.0
63	69.0	68.7	69.2	71.0	72.0	73.2	74.0	74.5	75.7	76.2	77.7	79.5	81.2	83.0	83.7	83.7
80	71.0	71.0	71.7	72.7	73.7	75.0	76.7	78.0	80.0	81.5	83.2	84.7	86.0	87.0	87.2	86.7
100	75.7	75.5	76.7	78.0	79.5	80.7	82.2	83.0	84.5	85.5	87.0	88.0	88.7	89.2	88.7	88.0
125	77.5	78.0	79.0	80.0	81.5	82.7	84.7	85.0	85.7	86.2	86.2	86.7	87.0	87.5	87.0	88.0
160	78.0	77.5	78.2	79.0	80.0	80.7	81.7	83.0	83.7	84.7	85.2	85.5	85.7	87.2	88.2	89.0
200	80.2	80.5	81.0	81.5	82.0	82.0	82.5	84.2	84.7	85.5	86.5	87.5	88.2	89.5	90.2	90.7
250	86.0	86.0	85.5	84.7	84.2	83.7	84.0	85.5	86.0	87.7	88.5	89.5	89.7	89.2	90.2	91.5
315	84.0	84.0	83.7	83.7	84.7	85.5	85.5	86.0	86.5	86.2	87.0	88.2	89.5	89.7	90.0	90.0
400	82.7	83.2	84.0	84.5	85.5	85.7	85.7	85.2	85.0	85.5	86.0	86.7	87.5	88.5	88.7	89.2
500	83.5	83.7	84.0	84.7	85.0	85.5	85.0	85.2	86.0	86.5	86.2	86.7	86.5	87.0	87.7	88.0
630	85.0	85.2	84.7	85.2	85.0	84.7	85.0	85.5	85.7	86.7	87.0	87.2	87.5	87.0	87.2	87.2
800	83.5	84.0	85.2	85.2	86.2	86.0	85.7	86.0	86.5	86.7	87.7	88.0	88.5	88.5	88.0	87.7
1000	82.5	83.2	84.5	86.2	86.7	86.5	86.5	87.0	87.7	88.0	88.7	89.5	89.7	89.7	88.5	87.2
1250	84.0	84.0	85.0	86.2	87.2	87.2	87.7	87.7	88.5	89.0	89.7	90.0	90.2	89.5	88.5	87.0
1600	90.5	88.0	88.0	90.2	92.5	95.0	89.7	95.2	93.0	90.5	92.7	94.2	95.7	95.0	92.5	89.0
2000	92.5	88.7	89.2	91.5	93.7	97.0	91.0	97.2	95.0	91.5	94.0	96.0	97.2	97.0	94.2	90.2
2500	85.7	86.2	88.0	89.0	88.2	88.5	88.0	88.2	89.0	89.7	90.7	91.5	91.0	90.5	88.5	86.2
3150	86.5	89.0	89.5	92.0	93.0	92.7	91.2	90.0	89.2	89.5	90.7	92.5	94.5	93.2	89.0	87.5
4000	86.2	89.5	90.2	92.0	93.5	93.2	92.0	89.5	88.0	89.2	90.0	91.5	95.0	93.7	88.0	87.7
5000	84.7	85.7	86.7	87.2	89.0	89.0	87.5	88.0	88.5	88.7	89.7	92.0	92.0	90.7	88.0	86.0
6300	85.5	84.7	85.5	87.5	89.0	88.0	88.0	88.2	88.7	89.5	90.2	90.5	90.7	89.7	88.0	84.2
8000	85.5	83.5	85.0	86.5	88.0	87.0	86.2	87.0	87.0	88.0	90.0	89.5	90.0	87.7	86.0	82.2
10000	83.5	82.5	84.0	84.2	84.7	85.7	84.7	84.2	84.7	86.5	86.5	87.5	88.5	86.7	84.2	88.5
12500	79.0	80.0	82.2	82.2	82.5	83.0	83.7	82.0	82.0	84.2	85.0	84.5	86.5	85.5	82.7	79.0
16000	77.5	79.5	81.0	81.0	82.2	81.7	81.7	81.0	81.2	83.0	83.7	84.5	86.7	85.0	82.0	78.0
20000	75.7	76.7	78.2	79.0	79.5	79.0	79.0	79.0	78.7	79.7	81.2	82.2	84.0	82.7	80.5	75.7
25000	72.0	73.7	75.2	76.2	76.5	76.5	76.5	76.0	76.7	77.5	79.0	80.2	81.2	80.2	77.5	73.7
31500	68.0	69.2	71.0	71.7	72.5	72.2	72.5	72.2	73.0	74.2	75.5	76.7	77.2	76.5	73.7	70.5
40000	63.7	64.7	66.0	67.5	67.5	68.2	68.2	68.2	69.0	70.2	71.7	72.7	73.2	72.7	70.5	67.5
DR(A)	97.7	98.0	98.2	100.2	101.5	102.2	100.0	101.5	100.2	100.0	101.2	102.2	104.0	103.0	100.2	97.5
DR(L)	99.0	99.0	99.2	100.7	102.0	102.7	100.5	102.2	101.5	101.2	102.0	103.7	105.0	104.5	102.5	101.5
IDENT	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	102

RUN 010 18-INCH O-FAN 47.1 DEGREE BLADE ANGLE 7642 RPM DATE 11/27/72 TIME 11-47-35

MODEL DIAMETER = 0.457 M ( 1.50 FT) ; MODEL THRUST = 1423. N ( 320. LB) ; MICROPHONE RADIUS = 7.62 M ( 25.0 FT)

TEST TEMPERATURE = 13.9 C ( 57.0 F) ; TEST RELATIVE HUMIDITY = 52.0 PCT

DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	64.0	64.2	66.0	68.0	69.0	70.0	71.7	72.7	73.5	73.7	74.5	73.5	74.5	75.2	75.7	75.7
63	65.7	65.0	65.7	68.0	68.0	68.7	69.5	70.7	71.5	74.2	75.0	76.5	78.0	79.5	79.5	80.5
80	67.0	67.5	68.0	68.0	68.5	70.2	72.0	73.5	75.7	77.5	78.7	80.2	81.2	82.7	83.0	83.0
103	71.5	71.2	71.5	73.0	74.0	75.5	77.0	78.7	79.5	81.2	82.2	83.0	84.0	84.0	83.5	82.5
125	74.0	73.7	74.7	75.7	76.5	77.5	79.0	81.2	82.5	84.0	83.5	83.0	84.2	84.7	83.2	83.7
160	74.0	74.0	74.5	75.5	75.7	76.7	77.5	78.5	78.7	79.7	79.7	79.7	80.0	80.5	82.0	83.5
200	77.7	77.7	78.7	78.7	78.7	79.0	79.0	79.2	80.0	80.5	80.2	81.2	81.7	83.2	83.5	84.0
250	81.7	81.7	81.5	81.0	80.5	79.7	79.0	78.5	79.5	80.5	82.5	84.5	84.0	84.5	83.5	85.5
315	77.0	77.0	77.2	77.7	78.5	79.0	79.5	79.7	80.0	80.0	80.0	80.2	81.0	82.0	83.2	83.5
403	76.7	76.7	76.7	77.7	78.5	78.5	78.5	78.5	78.7	79.0	79.5	79.0	79.2	80.2	80.7	81.2
500	76.0	76.2	77.2	78.5	79.2	79.0	79.2	78.7	79.2	79.2	79.7	80.0	79.7	80.0	81.0	81.0
630	76.7	77.5	78.2	78.5	78.7	78.7	78.5	79.0	79.2	79.7	80.5	80.7	80.5	80.5	80.7	81.0
800	79.2	79.2	79.7	79.5	79.0	78.7	79.5	79.5	79.7	81.0	80.7	81.2	81.7	81.5	81.5	81.0
1000	79.5	79.5	79.5	79.5	79.7	80.0	80.0	80.7	81.5	82.2	82.2	82.5	82.0	82.0	82.2	80.7
1250	77.2	78.2	79.7	80.5	81.5	81.0	82.0	82.5	82.7	82.7	83.0	83.2	83.5	83.2	83.0	81.0
1600	84.0	85.7	85.5	85.7	85.2	84.2	90.7	88.5	87.7	88.7	87.5	90.7	89.5	90.5	88.7	84.2
2000	79.5	80.0	80.5	80.5	81.2	81.5	82.5	82.2	82.7	82.7	83.0	83.0	84.0	83.0	81.7	80.7
2500	79.7	80.2	80.7	81.5	80.2	81.0	80.5	80.5	81.0	82.0	83.0	83.5	83.5	83.0	81.5	80.0
3150	81.7	80.5	81.0	86.5	83.5	83.5	82.0	81.7	82.0	83.7	85.0	84.2	85.2	84.5	83.2	81.0
4000	79.5	79.7	80.0	80.5	80.5	80.0	81.0	80.0	79.5	80.5	81.0	82.5	83.2	83.2	81.2	79.2
5000	81.0	79.2	81.5	81.0	82.2	82.5	83.5	82.0	82.2	83.0	82.7	83.7	85.0	84.5	81.7	80.2
6300	80.5	78.5	83.0	81.7	80.7	81.7	81.5	82.0	83.0	82.7	83.2	83.5	84.5	83.7	84.0	80.0
8000	79.0	77.5	78.2	79.5	79.2	79.5	79.2	78.7	77.7	79.0	80.0	80.2	81.5	80.7	79.2	76.5
10000	77.5	76.7	78.0	79.5	78.2	79.2	78.0	76.2	76.2	77.7	79.2	79.5	82.0	81.7	79.5	74.7
12500	73.5	77.7	76.0	77.5	76.5	76.2	75.2	74.2	74.7	75.5	77.2	78.2	79.2	79.2	77.2	73.5
16000	73.0	74.0	74.7	75.2	75.5	75.0	74.5	73.5	74.0	74.5	76.5	77.2	78.0	77.7	76.7	72.5
20000	69.7	71.2	72.2	72.5	72.0	72.2	72.7	70.7	71.2	72.0	74.0	75.5	75.5	75.2	74.5	70.2
25000	67.5	68.0	68.7	69.2	68.7	68.7	69.2	68.0	68.5	69.2	70.5	71.5	73.5	73.0	71.2	67.2
31500	53.0	64.0	64.2	65.0	64.5	64.7	65.0	64.0	64.5	65.2	66.7	68.0	69.5	69.0	67.2	64.0
40000	58.5	59.2	59.7	61.5	60.0	59.7	61.0	59.7	60.7	61.7	62.7	64.0	65.2	65.0	63.5	60.5
DB(A)	91.5	91.2	92.0	93.0	92.2	92.2	93.7	92.7	93.0	94.0	94.2	95.0	95.2	95.0	94.0	91.0
DB(L)	93.0	92.5	93.5	94.0	93.5	93.7	95.0	94.2	95.0	95.7	95.7	97.0	96.7	97.2	96.7	95.2
IDENT	133	132	131	130	129	128	127	126	125	124	123	122	121	120	119	118





PUN 012 18-INCH Q-FAN 62.5 DEGREE BLADE ANGLE 6136 RPM DATE 11/27/72 TIME 11-47-41  
 MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1294. N ( 291. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.1 C ( 52.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCI  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	64.0	64.7	65.2	66.5	67.7	69.7	70.5	71.5	72.2	72.0	72.7	73.5	74.5	74.2	75.2	75.2
63	65.7	65.7	66.2	66.7	67.5	68.0	70.0	70.2	71.2	73.0	74.7	76.0	77.0	79.2	78.7	79.2
80	68.0	68.0	69.2	69.2	70.5	71.5	73.0	74.0	75.7	77.5	78.5	79.7	81.5	82.5	82.5	82.0
100	73.7	73.7	74.5	75.2	76.2	77.2	79.5	80.5	82.5	83.0	83.7	84.7	85.0	85.0	83.7	82.7
125	74.7	75.7	76.2	77.0	78.2	78.5	79.2	80.2	81.0	81.7	81.7	82.5	83.0	83.2	83.0	83.0
160	76.7	76.7	78.0	77.5	78.7	79.2	80.0	80.2	81.0	80.2	80.5	81.0	81.7	82.2	83.0	84.2
200	80.0	80.0	81.2	80.5	80.7	81.0	81.0	81.0	82.2	83.0	83.5	83.0	84.5	83.7	85.5	85.0
250	81.0	81.0	81.2	80.5	80.2	80.5	80.0	79.7	80.0	81.0	82.5	83.0	83.2	83.2	83.7	84.2
315	77.7	77.7	78.2	78.2	78.7	79.2	79.5	79.7	80.7	80.2	80.2	81.0	81.5	82.0	82.7	82.5
400	78.0	78.0	77.7	78.5	79.5	79.2	79.0	78.7	80.0	80.0	80.0	80.5	81.0	81.2	81.2	81.5
500	79.0	78.7	78.7	80.0	80.0	80.5	80.7	80.2	80.2	81.0	80.7	81.5	81.7	82.0	82.0	81.5
630	79.5	79.7	80.5	81.0	80.7	80.0	80.2	80.5	80.2	81.2	81.5	82.2	82.5	82.5	82.5	81.7
800	80.7	81.2	81.5	83.2	83.0	82.7	82.5	81.7	82.7	83.2	84.7	86.0	86.2	86.5	85.7	83.0
1000	82.5	82.5	82.5	83.2	83.0	82.7	82.5	81.7	82.7	83.2	84.7	86.0	86.2	86.5	85.7	83.0
1250	85.0	85.0	88.0	92.5	89.7	89.7	94.0	87.7	92.0	85.5	95.7	96.0	98.5	99.7	98.7	92.5
1600	82.5	82.0	82.5	82.7	83.2	83.2	83.0	82.7	83.0	83.5	84.0	85.0	85.7	85.7	84.5	82.0
2000	82.5	82.7	83.2	83.5	83.5	84.0	83.5	83.0	82.7	83.7	84.5	85.5	86.7	86.5	84.2	81.2
2500	84.0	85.2	86.7	88.2	88.7	88.7	84.7	83.0	83.2	84.2	86.2	87.7	88.5	87.2	85.5	82.7
3150	82.5	83.2	83.0	83.2	83.2	83.2	82.7	82.2	82.0	83.0	83.2	85.2	86.5	85.7	83.5	80.0
4000	82.0	87.7	85.7	84.5	82.7	84.5	84.0	82.2	82.7	82.5	83.5	84.7	85.7	85.2	83.0	79.5
5000	82.5	84.0	82.7	84.5	86.0	84.0	82.7	81.7	82.7	82.7	83.5	85.7	86.5	85.7	82.5	79.0
6300	81.5	82.7	82.7	84.7	85.2	84.2	81.5	80.5	80.0	81.2	82.0	82.7	86.0	84.0	82.0	78.0
8000	82.0	81.5	82.0	82.0	81.5	81.7	81.2	79.7	78.2	79.7	81.0	81.7	84.2	83.7	81.0	76.2
10000	81.0	80.2	81.2	81.0	80.5	79.5	78.7	78.0	77.2	77.5	78.5	78.7	79.7	80.2	77.7	72.7
12500	78.5	80.0	79.7	80.5	79.5	79.5	78.2	76.7	75.7	76.2	77.5	77.2	79.0	78.7	77.0	72.0
16000	79.0	79.0	79.7	79.5	78.7	77.7	77.5	75.5	74.5	75.2	75.7	74.7	76.2	77.0	74.5	69.5
20000	76.7	77.0	77.2	77.5	76.5	76.0	74.7	73.0	72.2	72.7	74.0	74.7	76.2	77.0	74.5	69.5
25000	74.5	75.2	75.0	75.2	74.5	74.0	72.5	70.7	69.2	69.7	71.2	72.5	74.2	74.2	72.0	68.0
31500	71.7	72.0	72.2	72.0	71.2	70.2	69.2	67.5	67.0	67.0	68.0	69.0	71.5	71.5	69.0	64.5
40000	68.2	68.7	68.5	68.5	68.0	66.7	65.0	63.5	62.5	63.0	63.7	65.5	68.0	68.0	66.2	61.5
DR(A)	93.2	94.7	94.5	96.0	95.7	95.5	95.2	93.2	94.2	93.5	96.2	97.5	99.2	99.7	98.0	93.7
DR(L)	95.0	95.5	95.7	97.2	97.0	96.5	97.0	95.5	96.2	96.0	98.7	99.2	100.7	101.5	100.5	97.0
IDENT	166	165	164	163	162	161	160	159	158	157	156	155	154	153	152	151

RIN 013 18-INCH Q-FAN 62.5 DEGREE BLADE ANGLE 7391 RPM

DATE 11/27/72

TIME 11-47-44

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1842. N ( 414. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.1 C ( 52.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	66.5	67.5	68.7	70.2	71.7	73.0	74.0	74.7	75.2	75.7	76.7	77.2	77.2	77.7	78.5	78.5
63	68.0	68.7	68.7	70.0	70.7	71.5	73.5	73.7	75.2	76.0	77.0	78.7	79.7	82.0	82.2	82.7
80	71.5	71.2	71.7	72.2	73.0	74.7	76.5	77.5	79.0	80.2	81.5	83.5	84.7	86.0	86.0	85.7
100	76.0	77.2	77.5	78.7	79.2	80.7	82.2	83.2	83.7	85.5	86.2	86.2	87.5	87.7	87.2	86.5
125	78.5	79.0	80.2	81.5	82.5	83.0	83.7	85.5	86.5	87.5	87.5	87.2	87.7	88.2	88.0	87.0
160	78.5	79.2	79.5	80.5	81.0	81.5	82.0	83.0	84.0	83.7	84.5	85.0	85.7	86.7	87.2	88.7
200	82.5	83.2	83.7	84.2	84.2	83.2	84.2	85.7	86.7	87.5	87.7	87.7	88.2	88.7	90.0	91.0
250	86.7	87.0	86.5	86.5	86.2	85.7	85.5	86.2	87.0	88.5	89.5	90.5	89.5	89.2	89.5	91.0
315	84.7	84.7	84.2	84.5	86.2	85.0	85.0	85.7	86.0	86.5	86.5	87.2	87.7	88.5	89.0	88.7
400	81.7	82.2	82.7	83.7	84.5	84.0	84.2	84.5	84.7	85.0	85.5	85.7	86.2	86.0	87.0	87.7
500	82.5	83.0	84.2	85.0	85.0	85.0	84.2	85.2	85.5	86.0	86.5	86.5	86.0	86.7	86.5	86.5
630	83.2	84.2	84.7	84.7	85.2	85.2	85.2	85.7	86.0	86.2	86.7	87.0	87.5	87.5	87.0	86.5
800	85.0	85.7	85.5	86.0	85.7	86.0	85.7	86.5	86.2	87.0	87.5	88.5	88.5	88.2	87.5	86.5
1000	84.7	85.5	86.2	86.5	87.2	87.0	86.2	87.2	87.0	88.0	88.5	89.0	89.5	89.2	88.0	86.5
1250	85.5	86.2	86.5	87.0	88.0	87.5	87.7	88.0	89.5	89.5	90.2	91.7	91.0	90.7	89.5	87.5
1600	88.2	89.7	91.0	89.5	90.5	91.2	91.7	90.5	97.0	94.2	96.0	98.2	97.0	95.7	94.0	94.7
2000	86.5	87.2	87.7	88.0	88.0	88.5	87.7	87.7	88.0	88.5	89.7	90.7	90.5	90.2	87.7	85.5
2500	87.0	87.0	88.0	89.5	87.7	88.2	88.5	87.7	88.7	89.0	89.5	91.0	91.0	90.2	88.0	84.5
3150	87.5	87.7	90.5	93.2	90.0	88.5	93.7	90.5	94.5	91.0	90.0	95.0	93.2	92.0	90.5	86.5
4000	85.0	86.5	90.0	88.5	90.0	88.7	88.0	87.5	87.2	88.5	88.5	90.2	91.5	90.2	87.7	85.0
5000	85.2	86.0	89.2	88.0	89.7	88.7	88.7	87.7	86.7	87.7	88.5	89.5	90.7	90.0	87.0	84.2
6300	85.5	86.5	88.2	88.2	90.0	88.0	87.5	89.2	87.5	88.2	90.7	90.7	90.5	89.2	87.5	82.7
8000	86.0	89.0	87.0	86.7	86.7	86.5	85.5	85.2	85.5	86.0	87.2	87.5	89.0	88.5	85.5	80.7
10000	84.2	84.7	85.7	85.0	85.2	85.2	84.2	84.0	83.0	84.5	86.0	86.5	87.2	87.5	83.7	79.2
12500	83.7	83.7	85.0	83.7	84.2	84.5	84.2	82.2	81.5	82.2	83.2	85.0	86.5	85.2	82.5	77.7
16000	82.2	83.0	83.0	83.5	83.7	83.0	82.5	81.5	81.0	81.5	82.5	83.5	84.5	83.7	81.2	77.0
20000	80.7	81.0	81.0	81.2	81.0	81.2	80.2	79.0	78.5	79.0	80.2	81.7	82.5	82.0	79.0	74.7
25000	78.7	79.0	79.0	78.7	79.2	78.5	77.5	76.2	76.0	76.5	77.5	78.7	80.0	80.0	76.7	72.7
31500	75.7	76.0	76.5	76.2	76.2	75.5	74.7	73.5	72.2	73.0	74.0	75.7	77.2	76.7	73.5	70.0
40000	72.0	72.0	73.0	73.0	72.7	72.0	71.0	70.2	69.2	70.2	70.7	72.0	73.7	73.7	70.7	67.5
DR(A)	97.0	97.7	99.2	99.7	100.0	99.2	100.0	99.2	100.5	100.0	101.0	102.7	102.5	101.5	99.2	97.7
DR(L)	98.2	98.5	100.2	100.2	100.7	100.5	100.7	100.5	101.7	101.5	102.5	104.2	103.5	103.5	102.2	101.2
IDENT	182	181	180	179	178	177	176	175	174	173	172	171	170	169	168	167

RUN 016 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7796 RPM DATE 11/27/72 TIME 11-47-48

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1842. N ( 414. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 8.9 C ( 48.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	71.7	71.7	71.7	71.7	71.5	73.7	74.5	75.5	75.2	76.5	77.5	76.7	77.2	77.5	78.5	78.5
63	70.2	70.2	70.2	70.2	71.0	72.7	73.0	74.2	75.5	75.7	77.5	79.5	80.0	81.7	82.0	82.0
90	72.2	72.2	72.2	72.2	73.5	74.7	76.5	77.7	79.0	80.5	82.0	83.5	85.0	85.5	86.0	86.0
100	78.5	78.5	78.5	78.5	79.7	81.2	81.5	83.0	83.2	84.5	86.0	87.2	87.2	87.2	87.2	87.2
125	80.5	80.5	80.5	80.5	81.5	82.0	82.7	84.5	85.5	86.0	87.0	87.5	88.0	87.0	86.5	86.5
160	79.0	79.0	79.0	79.0	81.2	81.0	81.0	82.0	82.5	82.7	83.7	85.5	85.7	86.0	87.7	87.7
200	82.7	82.7	82.7	82.7	83.7	83.0	82.5	84.2	84.5	85.5	86.0	87.0	87.2	88.0	89.5	89.5
250	86.0	86.0	86.0	86.0	85.0	84.5	84.7	84.5	85.0	86.5	88.0	89.0	87.7	87.5	88.2	88.2
315	83.0	83.0	83.0	83.0	83.2	84.0	84.0	84.7	85.0	85.0	85.5	86.5	86.5	87.2	87.7	87.7
400	83.0	83.0	83.0	83.0	84.7	84.0	83.2	84.2	83.7	84.2	84.5	85.5	85.7	85.2	86.7	86.7
500	83.7	83.7	83.7	83.7	83.7	84.0	83.5	83.5	83.7	84.7	85.2	86.0	85.0	85.5	86.2	86.2
630	84.0	84.0	84.0	84.0	83.5	83.5	83.2	84.2	83.7	85.0	85.5	86.2	85.5	86.2	86.2	86.2
800	84.2	84.2	84.2	84.2	83.7	84.0	84.2	84.7	85.0	85.0	86.2	86.2	86.5	86.7	86.2	86.2
1000	85.0	85.0	85.0	85.0	84.7	85.2	85.2	85.0	85.7	86.5	88.0	87.0	87.5	87.2	86.2	86.2
1250	85.2	85.2	85.2	85.2	85.5	86.7	86.2	87.5	87.7	88.7	91.2	89.2	88.7	88.0	88.2	88.2
1600	90.5	90.5	90.5	90.5	92.5	98.5	93.5	99.0	98.5	101.7	106.0	101.5	100.5	99.2	99.7	99.7
2000	86.5	86.5	86.5	86.5	86.0	87.0	87.0	87.2	88.0	88.5	91.2	89.2	89.0	88.5	87.0	87.0
2500	86.5	86.5	86.5	86.5	85.2	86.2	86.5	87.0	86.7	87.0	89.5	88.7	88.7	88.0	86.0	86.0
3150	92.7	92.7	92.7	92.7	88.2	88.2	88.5	88.2	87.7	89.2	91.7	93.2	93.2	90.2	88.5	88.5
4000	86.5	86.5	86.5	86.5	85.0	86.2	86.0	85.7	85.5	86.5	88.2	88.2	88.2	88.0	86.7	86.7
5000	89.5	89.5	89.5	89.5	87.2	89.5	89.5	89.2	87.7	88.5	90.0	90.0	89.2	87.7	86.2	86.2
6300	90.2	90.2	90.2	90.2	86.5	86.7	87.0	87.0	87.5	88.0	89.2	88.5	88.7	88.0	86.7	86.7
8000	87.0	87.0	87.0	87.0	85.0	85.7	85.5	85.0	86.0	85.5	87.0	86.5	89.5	86.2	84.2	84.2
10000	83.7	83.7	83.7	83.7	83.7	84.0	83.7	83.2	83.0	84.5	85.2	86.2	87.2	85.7	83.5	83.5
12500	82.0	82.0	82.0	82.0	81.2	81.5	81.5	80.2	81.0	81.7	83.2	83.2	84.2	83.7	83.5	83.5
16000	81.5	81.5	81.5	81.5	80.7	80.7	80.5	80.0	80.2	82.0	82.0	82.5	83.5	82.5	79.7	79.7
20000	78.7	78.7	78.7	78.7	78.5	78.2	77.7	77.5	77.7	78.2	80.0	79.5	81.5	80.0	79.0	79.0
25000	76.0	76.0	76.0	76.0	75.5	75.5	76.0	74.7	75.0	75.7	78.0	77.7	78.5	77.7	83.2	83.2
31500	72.5	72.5	72.5	72.5	71.7	72.2	72.0	71.2	72.0	72.2	74.2	74.2	75.2	74.2	77.5	77.5
40000	68.7	68.7	68.7	68.7	67.7	68.0	68.0	68.0	68.7	69.0	71.0	70.7	71.7	70.7	76.5	76.5
DR(A)	99.7	99.7	99.7	99.7	97.2	100.2	99.0	100.5	100.5	102.5	106.5	103.2	102.7	101.7	101.2	101.2
DR(L)	100.0	100.0	100.0	100.0	99.0	101.5	100.2	101.7	102.0	103.7	107.5	104.5	104.2	103.0	103.5	103.5
IDENT	15	15	15	15	14	13	12	11	10	9	8	2	7	5	3	3

RUN 017 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7796 RPM

DATE 11/27/72

TIME 11-47-51

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1904. N ( 428. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 8.9 C ( 48.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ.

SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M

HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	66.7	67.7	67.7	67.7	67.7	72.5	74.0	76.7	79.0	79.0	81.7	78.2	81.7	79.2	79.7	79.7
63	68.2	68.0	68.0	68.0	68.0	72.0	72.7	73.5	78.0	78.0	80.7	79.5	83.0	81.2	83.0	83.0
80	71.5	70.7	70.7	70.7	70.7	73.7	76.0	78.7	80.0	80.0	82.7	83.2	85.2	85.7	86.0	86.0
100	77.2	77.0	77.0	77.0	77.0	80.5	81.7	82.5	84.5	84.5	86.5	86.5	87.5	87.7	87.0	87.0
125	78.0	78.0	78.0	78.0	78.0	82.0	83.5	85.0	86.0	86.0	86.7	86.2	87.2	86.2	85.7	85.7
160	78.0	78.0	78.0	78.0	78.0	80.7	81.2	82.5	83.5	83.5	84.2	84.5	85.5	85.5	87.0	87.0
200	82.0	82.2	82.2	82.2	82.2	82.7	82.7	84.0	85.5	85.5	86.2	86.5	87.2	88.5	89.5	89.5
250	86.2	86.7	86.7	86.7	86.7	85.0	84.7	85.0	86.0	86.0	88.0	88.5	88.2	87.7	88.5	88.5
315	83.0	83.0	83.0	83.0	83.0	83.7	84.5	84.7	85.2	85.2	85.5	86.5	86.2	87.7	88.0	88.0
400	81.0	81.5	81.5	81.5	81.5	84.0	83.5	84.5	84.0	84.0	85.0	85.5	86.2	86.0	86.5	86.5
500	82.0	82.0	82.0	82.0	82.0	84.0	84.0	83.7	84.5	84.5	85.2	84.7	84.7	85.2	85.7	85.7
630	83.5	83.2	83.2	83.2	83.2	83.5	83.7	83.7	84.5	84.5	85.5	85.2	85.5	85.5	85.7	85.7
800	83.7	84.0	84.0	84.0	84.0	84.2	84.2	84.7	85.0	85.0	86.0	86.2	87.0	86.7	86.2	86.2
1000	82.7	83.2	83.2	83.2	83.2	85.5	84.7	85.2	85.7	85.7	87.0	87.2	87.2	87.5	87.0	87.0
1250	83.7	83.5	83.5	83.5	83.5	87.0	86.5	87.2	86.7	86.7	89.2	89.2	89.0	88.7	88.5	88.5
1600	94.0	92.0	92.0	92.0	92.0	99.0	93.0	98.7	96.0	96.0	102.2	102.2	100.2	100.7	100.7	100.7
2000	96.0	86.7	86.7	86.7	86.7	87.7	87.2	87.5	87.2	87.2	89.2	89.5	89.5	89.0	88.0	88.0
2500	85.5	86.2	86.2	86.2	86.2	87.0	86.2	86.5	86.0	86.0	87.7	89.0	88.7	88.2	87.0	87.0
3150	88.0	92.0	92.0	92.0	92.0	89.0	88.0	88.0	87.5	87.5	89.7	92.7	93.5	90.0	89.5	89.5
4000	84.2	84.5	84.5	84.5	84.5	86.5	86.0	85.7	85.5	85.5	86.7	88.2	88.7	88.5	86.7	86.7
5000	87.7	86.2	86.2	86.2	86.2	91.7	89.5	90.0	87.2	87.2	88.7	91.0	89.0	88.7	86.7	86.7
6300	87.5	84.2	84.2	84.2	84.2	87.2	86.5	87.2	87.2	87.2	87.2	88.2	89.2	87.7	87.2	87.2
8000	84.2	83.7	83.7	83.7	83.7	83.7	85.5	84.2	83.7	84.0	84.0	86.5	88.2	85.7	84.5	84.5
10000	85.0	82.0	82.0	82.0	82.0	83.7	83.0	83.2	83.0	83.0	83.7	86.5	87.0	85.2	84.2	84.2
12500	80.2	81.0	81.0	81.0	81.0	82.0	81.5	80.5	80.5	80.5	81.7	83.0	83.7	83.5	81.7	81.7
16000	78.7	80.2	80.2	80.2	80.2	81.2	80.2	79.7	79.5	79.5	81.0	82.5	83.7	82.5	81.0	81.0
20000	76.2	77.5	77.5	77.5	77.5	78.2	77.5	77.2	77.0	77.0	78.7	83.2	81.0	81.0	78.7	78.7
25000	74.0	75.0	75.0	75.0	75.0	75.7	75.0	75.2	74.7	74.7	76.0	78.2	78.7	78.5	76.5	76.5
31500	70.5	70.7	70.7	70.7	70.7	72.0	71.5	71.7	70.7	70.7	73.0	74.7	75.2	74.7	73.5	73.5
40000	67.0	67.2	67.2	67.2	67.2	68.2	67.7	68.5	67.2	67.2	69.5	71.5	71.5	71.2	69.5	69.5
DB(A)	98.5	97.7	97.7	97.7	97.7	101.2	98.0	100.2	99.2	99.2	103.0	103.7	103.0	102.2	102.0	102.0
DB(L)	99.2	99.0	99.0	99.0	99.0	101.7	99.5	101.7	100.7	100.7	104.5	105.0	104.2	104.0	103.7	103.7
IDENT	26	28	28	28	28	25	23	22	21	21	20	19	18	17	16	16

RUN 01R 18-INCH Q-FAN 47.1 DEGREE BLADE ANGLE 10330 RPM DATE 11/27/72 TIME 11-47-55

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2584. N ( 581. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 25.6 C ( 78.0 F ) , TEST RELATIVE HUMIDITY = 48.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	68.5	68.5	70.2	71.5	73.5	75.7	76.0	77.2	77.2	78.2	78.7	79.0	79.2	79.7	80.0	80.2
63	70.5	70.7	71.2	72.5	73.0	74.2	75.0	75.7	76.5	77.2	79.0	79.7	82.0	83.2	84.7	84.2
80	73.0	72.2	73.0	73.5	75.0	75.7	77.5	79.2	80.5	81.7	84.2	85.0	86.5	86.7	88.0	87.2
100	78.0	78.2	79.0	79.7	80.2	81.5	82.7	83.7	85.0	86.2	88.0	89.2	90.0	89.5	89.5	88.5
125	80.0	80.0	80.7	81.2	82.0	82.7	84.2	85.0	85.5	86.7	87.2	88.0	88.5	88.5	88.0	88.5
160	78.5	78.7	81.0	82.0	84.0	85.7	86.5	88.0	88.2	87.7	88.2	87.5	87.7	91.2	91.0	91.0
200	80.7	80.0	80.7	82.0	82.2	83.5	84.5	85.5	86.2	86.2	87.2	88.0	89.0	90.2	91.2	91.5
250	86.7	86.0	86.0	85.2	84.7	85.0	85.2	87.0	87.7	88.7	89.2	90.2	91.0	90.7	91.5	93.0
315	86.0	85.5	85.2	85.2	85.5	86.5	86.5	87.0	87.0	87.2	88.0	89.5	90.0	90.7	90.5	90.7
400	84.5	84.5	85.0	86.2	87.2	87.0	86.5	86.0	86.5	86.5	87.5	88.2	89.2	90.0	90.0	90.2
500	85.5	85.7	86.5	86.7	87.7	87.2	87.2	87.0	87.0	87.0	87.7	87.0	87.7	89.0	89.7	98.2
630	85.5	85.5	86.5	86.5	86.5	86.5	86.5	86.2	86.7	87.2	88.0	88.5	88.2	88.0	88.7	89.2
800	83.7	85.0	86.0	87.0	87.5	87.0	87.0	87.2	87.7	87.7	88.5	89.0	89.7	89.5	89.5	88.5
1000	84.0	84.2	86.0	86.7	87.2	87.2	88.0	87.5	88.2	88.7	89.2	89.5	90.0	89.5	89.5	88.2
1250	85.5	85.5	86.2	87.0	88.0	88.2	88.2	87.7	89.0	89.0	89.7	90.0	90.2	90.0	89.0	88.5
1600	87.5	87.5	87.7	87.0	88.0	88.7	89.5	89.5	89.7	90.0	90.5	90.7	90.7	90.2	89.2	88.0
2000	94.0	93.5	97.0	94.2	94.5	93.0	94.5	96.5	92.2	95.5	93.0	93.2	97.2	97.0	98.2	89.5
2500	85.5	86.2	88.2	88.5	88.5	89.0	89.2	90.0	89.5	90.2	91.2	91.5	91.2	90.7	90.0	87.2
3150	85.7	86.5	86.5	87.5	88.2	88.5	88.7	88.7	89.2	89.5	90.5	92.0	91.5	90.0	89.2	87.0
4000	88.5	88.2	88.5	88.5	90.0	90.0	90.7	93.5	89.7	93.7	93.5	92.5	93.5	91.5	89.5	87.7
5000	85.0	85.5	87.0	87.0	88.0	88.0	88.2	88.5	88.5	89.5	89.7	90.5	91.2	90.0	88.2	86.0
6300	86.0	86.0	88.2	87.7	89.2	90.2	90.2	89.0	90.2	90.7	91.5	92.2	91.2	90.2	89.5	85.5
8000	84.2	85.2	86.0	86.0	88.0	88.0	87.7	88.5	89.7	89.7	90.2	90.5	90.7	88.7	86.7	83.2
10000	83.5	83.7	84.0	84.5	85.2	85.5	86.7	85.5	86.0	87.2	88.5	89.0	89.2	87.0	85.2	81.7
12500	81.5	81.7	83.0	82.5	83.5	83.7	84.0	83.5	84.2	84.7	86.0	86.7	87.5	86.7	84.2	80.2
16000	79.7	80.5	82.0	82.5	82.5	83.0	82.7	82.2	82.7	84.2	85.5	86.7	87.2	86.5	84.0	79.7
20000	76.5	77.7	79.5	80.2	80.2	80.7	81.0	80.5	81.0	81.7	83.0	84.5	85.5	84.2	82.0	78.2
25000	74.0	75.2	76.7	77.2	78.0	78.0	78.2	78.0	78.5	80.0	81.2	82.0	83.2	82.2	80.2	75.7
31500	69.7	70.7	72.5	72.7	73.7	74.5	74.0	73.7	74.5	76.0	77.2	78.7	79.7	78.7	76.5	72.5
40000	64.7	66.0	67.5	67.7	68.7	69.7	69.2	69.2	70.0	71.5	73.0	74.2	75.5	74.5	72.0	68.5
DR(A)	98.7	98.5	100.5	99.5	100.0	99.7	100.7	101.2	100.5	101.7	102.0	102.2	103.0	102.5	101.7	98.2
DR(L)	99.2	99.7	101.2	100.5	100.7	101.0	101.7	102.2	101.5	103.0	103.2	104.0	104.5	104.2	104.2	102.5
IDENT	265	265	264	263	262	261	260	259	258	257	256	255	254	253	252	251

N JN 019 18-INCH C-FAN 62.5 DEGREE BLADE ANGLE 8600 RPM

DATE 11/27/72

TIME 11-47-59

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2322. N ( 522. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 18.9 C ( 66.0 F ) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS UNCORRECTED

FREQ.	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	57.7	68.7	69.5	75.0	73.0	74.5	75.7	76.2	77.2	77.5	77.5	78.0	79.0	79.0	79.7	80.5
63	69.5	70.5	70.7	74.7	72.0	73.5	74.5	74.2	75.2	76.5	77.7	79.5	81.0	82.5	83.7	83.5
80	72.5	73.0	73.2	76.7	74.2	75.5	77.2	78.7	79.7	81.2	82.7	84.5	85.7	86.7	86.7	86.0
100	79.2	79.0	80.0	80.5	80.7	81.7	83.5	84.0	84.7	86.5	87.2	88.5	89.2	89.5	89.2	87.7
125	81.7	81.2	82.0	82.5	83.5	84.5	85.0	86.2	86.5	86.7	87.2	87.7	88.7	88.0	89.0	88.5
160	81.2	82.2	82.5	82.5	82.7	84.0	84.5	85.0	86.0	86.2	86.5	87.7	88.5	89.0	90.5	91.2
200	84.5	84.5	85.2	85.0	85.0	86.2	86.0	86.7	87.7	89.0	89.5	90.2	91.2	92.0	94.0	94.5
250	89.7	88.5	88.7	88.5	87.0	86.7	88.0	89.2	90.0	91.2	92.2	92.5	92.5	91.7	93.2	94.5
315	89.2	89.0	88.5	87.7	87.7	88.5	89.0	89.5	89.7	90.7	90.5	90.2	90.2	91.2	91.7	93.0
400	87.0	86.5	86.7	87.0	87.2	87.5	88.0	88.0	87.7	88.5	89.2	89.2	89.5	91.0	91.2	92.0
500	86.2	86.5	87.2	88.0	87.5	88.0	88.0	88.5	88.5	89.2	89.5	90.2	89.0	90.0	90.2	90.7
630	87.0	87.2	87.7	88.5	88.5	88.7	88.5	88.2	88.7	89.7	90.5	90.2	90.5	90.5	90.5	90.2
800	87.0	88.0	88.2	89.5	89.2	89.2	89.2	89.0	90.0	90.0	90.7	91.5	92.0	91.5	90.5	90.2
1000	87.0	87.2	88.5	89.0	89.2	88.2	88.5	89.2	89.7	90.7	91.5	91.5	91.7	91.2	90.7	89.0
1250	86.5	86.7	88.0	88.5	89.5	88.7	89.2	89.7	90.2	90.7	91.7	92.0	92.0	91.5	90.2	88.0
1600	93.0	93.0	90.5	91.7	94.0	91.2	94.0	96.2	92.7	97.2	98.7	98.5	96.5	96.7	93.2	88.7
2000	91.0	91.0	90.0	90.5	91.5	90.2	91.7	93.2	91.2	94.0	95.5	95.0	94.5	94.0	91.0	87.5
2500	87.0	87.7	89.2	90.0	89.5	89.5	89.7	89.5	90.2	90.5	91.7	92.2	92.2	91.5	89.0	85.7
3150	89.7	90.5	91.2	90.7	92.5	90.7	91.7	91.5	90.5	91.5	92.2	95.0	96.5	93.2	89.5	87.5
4000	88.0	88.2	88.7	89.0	89.7	89.2	89.7	89.5	89.7	90.2	90.7	92.5	93.5	92.2	88.2	86.0
5000	87.5	87.5	88.5	89.7	90.2	90.0	91.5	91.0	91.2	91.0	91.5	92.2	93.5	92.2	88.5	84.5
6300	86.5	87.5	88.2	88.5	88.2	88.7	89.2	89.5	90.0	90.2	90.2	91.2	92.0	90.5	88.2	83.7
8000	86.2	87.0	88.0	88.5	88.5	88.2	88.5	88.2	88.2	89.2	89.5	90.7	90.5	89.5	86.7	82.2
10000	85.0	85.7	85.7	87.0	87.2	86.5	86.7	86.7	87.0	87.2	88.0	89.5	89.5	88.5	85.5	80.7
12500	83.7	84.5	85.2	85.7	85.2	85.2	85.5	85.0	85.0	85.0	86.5	87.7	89.0	87.7	84.0	79.5
16000	83.2	83.7	84.7	85.5	84.7	84.5	85.0	84.5	84.5	85.0	86.0	87.2	88.0	87.0	83.2	78.7
20000	81.0	82.5	83.0	83.5	83.0	83.0	83.0	82.5	82.7	82.7	83.5	84.5	85.7	85.0	81.2	76.7
25000	79.2	80.2	80.5	81.2	81.0	81.0	80.7	80.0	80.2	80.5	81.7	83.0	83.7	83.2	79.5	75.0
31500	76.7	77.5	77.2	78.0	77.5	77.0	76.5	76.5	76.7	77.0	78.2	79.5	80.2	79.7	76.5	71.5
40000	73.5	73.7	73.7	74.0	73.2	72.5	73.0	73.0	72.7	73.0	74.7	75.5	76.2	75.5	72.2	68.0
DR(A)	99.5	100.0	100.2	100.7	101.5	101.0	101.7	102.0	101.0	102.5	104.0	104.5	105.0	103.5	100.7	97.7
DR(L)	101.0	101.5	101.5	102.0	102.5	102.5	102.5	103.0	102.7	104.5	105.2	105.7	105.5	105.5	104.0	102.7
IDENT	283	281	280	279	278	277	276	275	274	273	272	271	270	269	268	267

RUN 020 18-INCH 0-FAN 62.5 DEGREE BLADE ANGLE 8960 RPM DATE 11/27/72 TIME 11-48-02

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2633. N ( 592. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)

TEST TEMPERATURE = 18.9 C ( 66.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT

DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	68.2	69.0	69.7	72.0	72.5	74.5	75.7	76.7	77.2	78.0	78.5	79.0	79.2	80.2	80.2	80.7
63	70.5	70.7	70.5	71.0	72.0	73.0	74.0	75.2	75.5	77.2	78.5	80.2	81.2	83.5	84.2	84.5
80	73.5	73.2	73.0	74.0	75.2	75.7	77.0	79.0	80.7	81.7	83.0	85.2	86.2	87.7	87.5	88.0
100	79.5	79.2	79.5	80.2	81.0	82.5	83.7	84.5	85.7	86.5	89.2	89.5	90.2	90.5	89.5	88.7
125	81.5	81.2	81.7	82.5	83.2	84.2	85.2	86.0	86.7	87.2	88.0	89.0	89.0	89.2	89.2	88.7
160	82.0	82.0	82.7	83.0	83.2	84.5	85.0	85.2	86.2	86.7	87.7	87.7	88.7	89.7	90.5	91.5
200	84.5	84.5	85.0	85.7	85.5	85.7	86.5	87.2	88.7	89.2	90.2	91.0	91.7	93.5	94.7	95.0
250	90.0	89.7	89.2	88.5	88.0	88.0	88.7	90.0	91.0	92.0	93.2	94.0	92.5	93.5	95.5	97.5
315	89.5	89.7	89.0	90.0	90.0	89.0	90.0	90.5	91.5	91.5	91.5	92.0	92.5	93.5	93.7	94.5
400	87.7	87.5	88.0	88.5	88.7	88.7	89.2	88.7	89.2	89.7	90.2	90.7	91.0	92.0	92.7	92.7
500	88.0	88.2	88.7	89.0	89.2	89.5	89.0	89.0	89.5	90.0	90.2	89.7	89.2	91.2	92.2	92.0
630	89.5	89.2	89.0	90.0	89.5	89.5	89.5	89.2	89.7	90.5	91.0	91.5	91.5	91.5	91.2	91.2
800	89.5	89.2	90.0	90.2	90.0	90.2	90.5	90.5	90.7	91.0	91.5	92.0	92.5	92.7	91.5	90.7
1000	89.0	88.5	89.5	90.5	90.2	90.5	90.0	90.2	91.0	91.7	92.7	92.7	93.5	92.7	91.7	90.2
1250	88.0	87.7	88.5	90.0	89.5	90.0	90.5	90.2	91.0	92.0	92.7	93.2	93.2	92.7	91.0	90.0
1600	91.0	90.7	92.5	94.7	94.0	92.0	90.7	92.5	92.5	93.7	95.5	98.5	97.2	95.2	91.5	90.7
2000	92.2	92.0	95.5	98.5	97.5	93.2	91.5	94.5	94.2	96.2	98.2	101.5	100.5	98.7	93.2	93.0
2500	87.7	88.2	89.5	90.5	90.5	90.2	90.5	90.7	91.0	91.7	92.7	94.0	93.7	93.2	90.5	87.7
3150	89.7	89.5	91.5	90.5	89.7	91.0	91.7	93.0	92.0	91.5	94.0	95.0	94.5	94.2	91.0	87.5
4000	99.5	90.0	93.0	91.0	89.2	92.2	93.0	94.0	92.5	91.5	94.0	94.0	94.2	95.2	92.2	87.2
5000	87.0	88.0	89.7	90.5	89.2	89.2	89.5	89.7	90.2	90.2	91.7	93.5	94.0	93.5	90.2	86.2
6300	87.5	88.2	88.5	89.0	89.2	89.2	90.0	90.2	90.7	91.2	91.7	93.0	93.0	92.5	89.2	85.7
8000	87.0	88.0	88.5	88.2	89.2	88.7	89.7	89.0	90.2	90.5	91.2	92.5	92.0	91.0	88.5	85.2
10000	87.0	86.2	87.0	87.0	87.5	87.0	87.2	87.2	87.7	88.5	90.0	91.0	91.7	90.7	87.5	83.5
12500	84.2	85.0	85.5	86.0	86.2	86.2	86.5	85.5	86.2	87.5	88.5	90.5	90.2	89.2	86.2	81.5
16000	83.2	84.7	84.7	86.2	86.0	85.7	85.2	85.2	85.5	86.7	88.0	89.2	89.5	89.0	85.5	81.5
20000	81.2	82.5	83.2	83.7	83.5	83.0	83.0	83.0	83.2	84.5	86.0	87.7	88.2	87.7	84.5	80.0
25000	79.0	79.7	80.7	81.5	81.7	80.7	81.2	81.0	81.5	82.2	84.2	85.5	86.5	86.2	82.7	78.0
31500	75.0	76.2	77.7	77.7	77.7	76.5	77.0	77.0	77.7	78.7	81.0	83.0	83.7	82.7	80.0	76.2
40000	71.5	72.2	73.7	73.5	73.5	73.0	73.0	72.7	73.5	74.7	77.5	79.2	80.2	79.5	76.5	72.5

IDENT 303 302 301 300 296 295 294 293 292 291 290 289 288 287 285 284

PUN 021 1A-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7910 RPM

DATE 11/27/72

TIME 11-48-05

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1904. N ( 428. LBI) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 17.8 C ( 64.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	57.2	68.5	70.5	71.0	73.0	73.0	74.5	75.5	76.0	76.5	76.5	77.5	77.2	77.5	78.0	78.7
60	69.5	69.2	69.5	70.2	71.2	72.0	72.7	73.5	73.7	75.7	76.5	78.0	79.7	81.0	81.5	82.2
80	71.2	70.7	70.5	72.0	73.0	74.0	75.7	76.5	78.2	80.2	81.7	83.2	84.2	85.5	85.2	85.5
100	76.5	76.2	76.5	78.5	79.2	80.0	81.2	82.0	82.5	84.2	84.5	85.7	86.7	87.0	87.0	86.5
125	77.7	78.2	78.5	79.7	81.2	82.7	82.7	84.0	84.7	85.0	85.5	85.2	85.5	85.5	85.7	85.0
160	77.5	77.7	78.2	79.0	80.0	80.2	80.7	81.5	82.5	82.7	83.0	83.7	83.7	84.7	86.0	87.2
200	81.5	82.0	82.5	82.2	82.2	82.5	82.0	83.5	84.5	85.0	85.5	86.5	86.7	87.5	89.0	88.7
250	86.2	85.5	86.0	85.5	84.7	84.5	85.0	84.7	85.5	86.0	88.0	88.0	87.5	87.5	88.5	89.7
315	83.0	83.0	83.0	83.2	84.2	84.7	84.7	84.2	84.7	85.2	85.0	86.5	86.7	87.5	87.5	88.0
400	82.5	82.0	82.2	83.2	83.7	84.5	83.7	83.5	83.5	84.0	84.5	84.5	84.7	86.2	86.5	86.7
500	82.7	83.0	83.5	84.7	84.5	84.0	84.0	83.5	84.5	84.5	85.0	85.0	85.0	85.7	85.7	85.7
630	84.5	84.5	84.5	84.7	84.0	84.0	84.2	84.5	84.2	85.0	85.2	85.5	85.7	86.0	86.2	86.0
800	85.5	84.7	84.7	84.7	84.5	85.0	84.2	85.0	86.2	86.0	86.0	86.7	86.7	87.5	86.5	85.5
1000	84.2	83.7	84.5	85.5	86.5	85.5	85.2	85.5	86.2	87.0	87.7	87.5	88.2	88.0	87.0	85.5
1250	84.0	83.5	85.0	85.7	86.5	86.7	87.0	86.7	87.5	87.7	89.2	89.5	88.7	89.2	88.2	86.0
1600	82.0	88.5	89.5	91.0	88.0	96.2	97.5	96.0	98.7	100.0	103.5	104.0	99.0	101.5	99.5	94.2
2000	88.0	87.0	87.5	87.2	87.5	87.5	88.0	87.5	88.0	88.7	90.7	91.0	90.2	90.0	88.0	86.5
2500	85.5	85.7	86.7	87.0	86.2	87.0	87.0	86.2	86.2	87.5	88.5	89.5	89.5	88.5	87.0	84.7
3150	87.0	87.2	89.5	92.7	90.0	87.7	88.7	86.2	86.5	87.5	88.5	90.2	90.5	88.7	89.0	85.0
4000	83.5	84.0	85.2	85.7	85.7	84.7	85.2	84.2	84.5	85.5	86.5	88.2	89.0	88.0	85.5	84.0
5000	84.0	86.0	86.0	85.7	85.7	85.7	86.0	87.2	86.0	86.7	87.0	89.5	89.2	87.5	86.0	83.7
6300	85.0	83.5	85.7	86.7	86.2	86.0	86.2	86.7	86.5	87.0	87.2	87.5	88.0	87.2	86.2	82.7
8000	81.7	83.0	85.0	87.0	87.0	86.0	85.0	84.5	84.7	85.5	86.0	87.0	86.5	86.2	84.5	81.0
10000	82.7	81.5	83.2	83.0	83.7	83.2	83.5	82.2	82.5	83.2	84.2	85.2	86.0	86.0	83.2	80.0
12500	80.0	81.7	81.7	81.7	82.0	81.7	81.7	80.5	80.5	81.7	82.7	84.5	84.0	84.2	82.0	78.5
16000	79.5	79.5	81.2	81.5	81.2	81.7	81.0	80.7	79.7	81.2	82.2	83.7	85.0	83.5	81.5	77.7
20000	77.2	77.0	78.5	78.5	79.5	79.0	79.0	78.5	78.0	78.5	80.0	81.2	83.2	82.0	79.7	76.0
25000	74.2	74.7	75.7	76.5	76.5	76.7	76.5	75.2	75.5	76.2	77.7	79.0	80.0	79.7	77.7	73.2
31500	71.0	70.5	71.7	73.0	72.7	72.7	72.5	72.0	72.0	72.5	74.0	75.7	77.0	76.2	74.0	70.0
40000	66.7	66.0	67.7	68.5	68.2	68.5	68.5	67.5	67.2	68.2	70.2	72.0	72.7	72.2	70.2	66.5
DR(A)	97.0	96.5	97.5	99.0	98.0	98.7	99.5	99.2	100.0	101.5	103.7	104.5	102.0	103.0	100.7	97.5
DR(L)	98.2	97.7	98.5	99.5	99.2	100.2	101.0	100.7	101.7	102.5	105.0	105.7	103.5	104.5	102.7	100.7
IDENT	319	318	317	316	315	314	313	312	311	310	309	308	307	306	305	304



PUN 022 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 9650 RPM DATE 11/27/72 TIME 11-48-09  
 MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2842. N ( 639. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 17.8 C ( 64.0 F ) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	68.5	69.0	70.7	72.7	74.2	74.5	76.7	77.5	78.5	79.7	80.0	79.7	80.2	80.2	81.5	81.2
63	70.2	70.0	70.7	71.5	72.5	74.0	74.5	75.5	76.7	78.0	79.0	80.5	82.7	84.0	85.2	85.0
80	72.7	73.0	72.7	74.0	75.0	76.2	77.7	79.7	81.0	82.5	84.0	85.5	86.7	87.7	88.0	87.7
100	79.0	79.2	79.5	80.7	81.5	82.7	83.5	85.0	86.2	87.7	89.0	89.7	91.0	91.0	91.0	90.0
125	81.2	81.2	80.7	82.5	83.2	84.5	85.5	86.0	87.0	88.0	88.5	89.0	89.5	90.2	89.7	89.5
160	80.2	80.2	80.7	82.0	82.2	82.7	84.7	86.2	87.7	88.5	88.2	88.2	88.7	91.0	91.0	91.0
200	82.0	82.0	82.5	83.5	84.2	84.7	86.0	86.7	88.0	89.2	90.5	91.0	92.0	93.0	93.5	94.5
250	85.2	88.0	88.0	87.5	87.2	87.7	88.7	89.7	90.7	92.0	93.2	94.0	94.0	94.0	95.0	96.5
315	88.5	88.0	88.0	88.0	88.0	89.0	89.0	89.5	90.0	90.7	92.7	93.0	92.7	93.7	94.2	95.2
400	87.5	87.7	89.0	90.0	89.7	89.5	89.2	88.5	88.5	89.5	90.2	91.0	92.5	93.0	93.0	93.2
500	89.2	89.0	89.7	90.2	90.5	90.2	89.7	89.2	89.7	90.0	90.2	90.5	90.5	92.5	93.2	92.5
630	89.0	88.7	90.0	90.5	90.0	89.5	89.5	89.5	89.7	90.2	90.7	92.0	92.0	91.5	92.2	91.7
800	87.2	88.0	89.7	91.0	90.5	90.0	89.5	90.7	90.7	91.2	91.5	93.0	94.0	93.7	93.2	92.2
1000	87.7	88.0	89.2	90.7	90.0	90.2	90.5	90.7	91.0	92.0	92.7	94.2	94.5	94.2	93.5	91.5
1250	87.2	87.7	89.0	90.0	90.2	90.5	91.0	91.2	92.0	93.0	93.0	93.7	94.2	93.7	92.5	90.7
1600	90.0	90.2	90.7	91.0	91.0	91.7	91.7	92.0	92.2	94.0	94.2	95.0	95.0	93.7	93.0	91.0
2000	93.0	92.0	96.0	97.2	95.2	97.7	98.2	96.7	97.7	103.7	105.5	104.7	104.5	102.5	101.5	97.2
2500	88.0	88.5	90.5	91.0	90.2	91.0	91.0	91.7	92.0	93.2	94.7	95.2	94.0	94.5	92.5	89.5
3150	89.2	88.7	89.5	90.2	90.0	90.5	91.0	91.0	91.7	92.2	94.2	95.5	95.0	93.7	91.5	89.5
4000	91.5	89.7	90.5	92.0	93.0	91.7	93.2	91.2	92.0	94.5	96.2	95.0	99.2	94.7	93.5	89.7
5000	87.2	88.5	89.0	89.5	89.0	89.2	89.7	90.2	91.2	91.2	92.5	93.7	94.0	93.2	90.5	87.2
6300	88.5	89.5	89.7	90.7	90.2	90.2	91.2	91.5	92.0	92.5	94.0	95.0	95.2	93.5	91.2	87.7
8000	88.7	87.7	89.2	89.7	89.5	89.7	89.7	90.7	91.5	93.2	93.7	93.0	93.0	92.0	89.2	85.7
10000	86.5	88.2	87.7	88.0	88.0	88.0	88.0	88.0	89.2	89.7	91.0	92.0	92.5	91.2	88.7	85.2
12500	85.2	84.7	86.0	86.2	86.5	86.5	86.7	86.7	87.0	89.0	89.5	91.0	91.2	89.0	86.5	83.5
16000	83.5	83.7	84.7	85.0	85.5	85.7	85.5	86.2	86.5	87.2	88.7	89.5	89.7	88.2	85.7	82.7
20000	80.7	81.5	82.5	83.0	83.5	83.5	83.5	83.5	85.0	85.5	86.7	87.7	88.2	87.0	84.7	80.5
25000	78.7	79.0	80.5	80.7	81.5	81.0	81.5	81.7	82.2	83.7	85.2	85.7	86.5	85.7	83.0	78.7
31500	75.0	75.7	76.7	76.0	77.2	77.0	77.7	78.0	79.0	80.0	81.7	82.5	83.5	82.0	79.7	75.5
40000	70.7	71.0	72.2	72.5	73.0	72.7	73.2	73.2	74.7	75.7	77.5	78.7	79.0	78.0	75.2	72.2
DB(A)	100.5	100.0	101.5	102.5	102.0	102.7	103.0	102.5	103.5	106.5	108.0	107.7	108.0	106.2	104.7	101.5
DB(L)	101.7	101.5	103.0	103.5	103.0	103.5	104.2	104.0	104.5	107.5	108.5	108.5	108.7	107.5	107.0	105.5
IDENT	335	334	333	332	331	330	329	328	327	326	325	324	323	322	321	320

RUN 023 18-INCH 0-FAN 43 DEGREE BLADE ANGLE 8372 RPM

DATE 11/27/72 TIME 11-48-12

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 1495. N ( 336. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 17.2 C ( 63.0 F ) , TEST RELATIVE HUMIDITY = 62.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	62.5	63.5	66.0	67.2	69.0	70.0	71.0	71.7	72.2	72.7	73.2	73.2	73.0	73.2	74.5	75.0
63	64.7	65.7	66.7	67.5	67.2	68.7	69.7	70.0	70.7	73.2	74.0	76.2	77.2	77.7	79.2	79.0
80	68.0	68.2	68.0	68.0	69.0	70.2	71.7	73.0	74.7	76.5	77.2	79.2	80.5	82.0	82.2	82.0
100	72.7	72.7	73.0	74.0	74.5	75.2	76.5	77.2	79.0	80.0	81.0	81.7	82.5	82.7	82.7	82.0
125	75.0	75.0	75.7	76.7	76.7	77.5	78.7	79.2	80.0	80.7	81.0	81.5	82.0	82.5	82.7	82.2
160	73.5	73.2	74.7	75.7	75.7	77.0	77.0	78.5	79.2	80.0	81.0	82.0	82.0	83.0	83.2	83.2
200	77.7	77.5	78.7	79.2	79.2	79.2	79.2	79.7	80.0	81.0	81.7	83.2	83.2	82.5	83.0	83.5
250	81.5	82.0	82.5	81.7	81.5	81.0	80.5	80.7	80.5	81.2	80.2	80.5	81.0	82.2	82.7	83.5
315	79.7	79.5	80.2	80.2	81.2	81.5	81.5	81.2	80.5	80.0	79.7	79.5	80.0	80.2	81.0	81.7
400	79.5	79.5	80.0	81.2	81.7	81.7	80.5	80.2	79.7	79.7	79.7	79.5	80.0	80.2	81.0	81.7
500	79.5	79.2	80.7	82.2	81.0	81.2	81.2	80.0	80.0	80.0	80.2	79.7	79.5	80.5	81.0	81.2
630	80.0	80.7	81.5	82.0	81.0	80.5	81.2	80.5	81.0	81.0	81.0	81.7	82.2	81.7	81.2	81.0
800	81.7	82.0	83.0	82.0	80.7	80.7	80.5	80.5	80.7	81.2	81.5	82.5	82.7	82.7	82.2	81.5
1000	83.0	82.0	82.5	81.7	81.5	81.2	80.7	81.0	81.2	81.5	82.0	82.5	82.0	83.0	82.2	81.2
1250	78.5	79.0	81.0	82.5	82.5	81.7	82.2	82.5	82.0	82.5	82.7	83.5	82.5	83.5	83.0	81.0
1600	84.5	86.2	88.0	88.0	86.7	88.2	90.2	90.0	87.0	85.5	85.5	84.7	83.7	84.0	84.2	83.0
2000	82.5	83.0	84.5	84.0	83.2	84.0	84.7	84.2	83.2	83.0	83.5	84.0	84.0	84.0	82.5	82.0
2500	81.0	81.5	82.5	82.2	81.5	82.5	82.0	81.5	81.5	82.0	82.0	83.0	83.0	83.5	82.0	80.7
3150	84.0	82.0	84.7	86.5	84.7	84.2	84.7	85.2	83.5	83.2	84.0	86.5	85.7	84.2	83.2	82.0
4000	79.7	80.5	82.0	82.2	82.0	81.5	81.2	81.0	80.2	80.5	82.0	82.2	83.7	83.2	81.5	81.0
5000	81.0	81.7	83.2	83.5	85.2	83.0	83.5	82.7	82.7	83.7	84.5	85.0	85.0	83.0	81.5	80.2
6000	80.5	81.2	83.2	83.0	83.0	82.7	82.0	82.2	82.2	83.0	83.5	84.0	84.7	83.0	81.0	79.5
8000	79.5	79.5	81.5	83.0	80.5	81.0	81.7	81.7	80.0	79.7	81.5	82.2	82.0	81.2	79.7	78.2
10000	79.5	80.2	80.5	81.0	79.0	80.0	79.7	79.2	78.5	78.7	80.0	82.2	80.5	82.0	79.2	76.5
12500	76.2	77.5	79.5	79.7	78.5	79.0	78.0	77.5	76.7	77.0	79.2	81.0	79.7	80.2	78.5	74.5
16000	75.7	76.2	77.5	79.0	77.2	78.0	77.0	76.5	75.5	76.2	78.0	78.5	78.7	79.7	78.0	74.0
20000	72.2	73.2	75.5	76.5	74.5	75.5	75.0	74.0	73.7	74.2	76.2	77.0	77.5	78.0	76.5	72.0
25000	70.0	70.2	72.5	73.0	72.0	72.2	72.2	71.5	71.0	71.7	72.7	74.5	75.0	75.2	74.0	70.0
31500	66.0	66.0	68.5	68.7	68.2	68.5	68.0	67.0	67.2	67.7	69.2	70.5	72.0	71.7	70.0	66.5
40000	61.0	61.2	63.2	64.0	63.2	63.7	63.5	62.7	62.7	63.5	65.0	66.5	67.5	68.0	65.5	62.0
DB(A)	92.7	93.0	94.5	95.0	94.2	94.0	95.0	94.5	93.2	93.0	93.7	94.7	94.7	94.5	93.2	91.7
DB(L)	94.0	94.5	95.5	96.2	95.5	95.5	96.2	96.0	95.0	95.2	96.0	96.7	96.5	96.5	95.5	95.2
IDENT	351	350	349	348	347	346	345	344	343	342	341	340	339	338	337	336

PUN 024 18-INCH O-FAN 43 DEGREE BLADE ANGLE 10210 RPM DATE 11/27/72 TIME 11-48-20  
 MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2277. N ( 512. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 17.2 C ( 63.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	30	40	50	60	70	80	90	100	110	120	130	140	150			
50	65.2	66.0	68.5	69.7	71.7	72.7	74.7	76.0	76.5	76.7	77.0	77.5	78.0	78.2	79.2	79.5
63	68.0	68.0	69.0	69.7	71.0	72.2	73.0	74.2	75.0	76.2	77.5	79.0	80.7	81.5	83.0	82.7
80	69.7	69.5	71.0	71.5	72.7	73.5	75.5	77.0	79.0	80.5	82.2	83.5	85.5	86.2	86.0	85.7
100	74.5	74.7	77.2	78.0	78.7	79.5	80.5	82.0	83.0	84.7	86.0	87.0	88.0	88.5	88.5	87.2
125	76.5	76.7	79.0	79.7	80.5	81.7	82.7	84.2	84.5	85.7	86.0	86.2	86.2	86.7	86.5	86.2
160	75.7	77.5	81.5	83.2	84.0	86.0	87.7	89.0	88.5	87.2	87.2	86.2	91.5	91.7	87.0	92.5
200	78.5	79.2	80.5	81.7	82.0	82.7	83.5	84.2	84.5	85.0	85.5	86.2	87.5	88.0	88.7	89.2
250	84.5	84.2	84.2	83.7	83.7	83.2	83.7	84.7	85.0	86.5	87.2	88.0	88.0	87.2	88.2	89.7
315	82.0	82.2	83.0	83.7	84.7	84.2	84.7	85.0	85.5	86.0	86.5	87.2	88.5	89.2	89.2	89.5
400	81.7	81.7	83.5	84.7	85.2	85.0	85.0	84.7	85.0	85.2	85.5	87.2	87.2	87.7	88.7	89.5
500	83.5	84.0	85.0	85.5	85.0	85.0	85.0	85.0	85.2	85.2	85.0	85.7	85.7	86.2	87.7	88.2
630	84.5	84.2	85.0	85.5	85.0	84.5	84.5	85.0	85.5	86.2	86.5	87.0	86.7	86.2	87.2	88.2
800	83.5	83.2	84.7	84.7	85.2	85.2	85.0	85.2	86.2	86.2	87.2	87.5	88.5	88.0	87.7	87.5
1000	81.7	82.0	84.2	85.0	85.7	85.5	85.0	85.5	85.7	87.2	87.7	88.5	89.5	89.2	89.5	87.5
1250	84.0	83.7	86.0	86.5	86.0	85.7	86.0	86.2	87.0	87.2	88.0	88.7	89.0	89.0	88.7	87.0
1600	84.5	85.0	85.7	86.0	86.7	87.0	87.0	87.5	87.2	87.5	88.5	88.7	89.7	88.7	88.5	87.2
2000	89.5	89.5	91.5	89.5	88.5	90.2	93.2	91.5	93.0	90.5	90.0	92.7	94.2	96.2	98.5	89.5
2500	83.2	83.7	85.7	86.5	86.2	86.7	86.5	86.7	87.2	87.7	88.5	89.7	89.5	89.5	89.5	86.5
3150	84.2	84.0	85.5	85.7	86.2	86.0	87.0	86.0	86.2	87.0	88.0	88.5	90.0	88.5	87.7	86.7
4000	87.7	85.5	88.5	88.7	88.5	87.7	88.0	89.2	86.7	87.2	88.0	91.5	93.0	93.2	90.5	88.2
5000	83.0	84.0	86.5	87.5	87.0	86.0	86.0	86.0	86.0	86.5	87.5	88.5	89.5	88.5	87.0	85.2
6300	83.5	85.5	88.0	87.7	87.2	88.0	88.2	88.2	88.7	88.7	89.5	88.7	91.5	88.7	88.2	85.2
8000	83.5	84.2	86.2	87.0	86.5	88.0	87.5	86.2	87.2	87.2	88.5	89.0	89.0	87.5	86.2	83.5
10000	82.0	82.7	83.5	84.5	85.0	85.2	85.0	84.7	84.2	86.0	86.5	87.2	88.7	86.0	85.0	82.0
12500	81.2	80.0	82.7	83.0	83.5	83.0	82.5	82.5	82.5	83.7	84.2	85.5	86.5	86.0	83.7	80.5
16000	78.5	79.2	81.2	82.2	82.5	83.2	83.0	82.0	81.5	83.2	83.7	86.0	86.5	85.7	83.0	79.5
20000	76.7	77.7	79.0	80.5	80.5	80.5	80.0	79.5	79.7	81.0	82.0	83.7	85.0	83.2	82.0	78.0
25000	73.7	74.5	76.5	77.5	77.7	77.5	77.5	77.0	76.7	78.7	79.7	81.7	82.5	81.5	79.0	76.0
31500	70.2	71.0	72.5	73.2	73.7	73.5	73.7	73.7	73.7	75.2	76.7	78.5	79.7	78.5	75.7	72.7
40000	65.5	66.2	68.2	69.0	69.0	69.5	69.2	69.2	69.5	71.2	72.7	74.7	75.2	74.7	72.2	69.0
DB(A)	96.2	96.0	98.0	98.0	97.7	98.5	98.7	98.2	98.5	98.7	99.2	101.2	101.5	101.5	101.7	97.5
DB(L)	97.2	97.2	98.7	99.2	99.2	100.0	99.7	99.7	100.0	100.0	100.7	102.2	103.5	103.2	103.2	101.5
IDENT	367	366	365	364	363	362	361	360	359	358	357	356	355	354	353	352

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 1383. N ( 311. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
TEST TEMPERATURE = 15.0 C ( 59.0 F ) , TEST RELATIVE HUMIDITY = 68.0 PCI  
DATA IS INCORRECTED

PFPO. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	52.7	64.2	66.0	67.7	69.2	70.7	71.0	72.5	72.2	72.7	73.2	73.7	73.5	75.0	74.7	74.7
63	65.2	65.7	66.7	66.5	67.7	69.0	69.7	70.2	71.7	73.2	74.7	76.7	78.0	79.2	79.2	79.0
80	67.5	67.5	68.5	68.5	69.7	70.5	72.2	72.7	74.7	76.0	78.0	79.7	80.7	81.7	82.7	81.7
100	72.5	72.5	72.7	73.5	74.7	76.2	77.0	77.5	79.0	80.2	81.0	82.2	82.7	82.7	82.7	82.0
125	74.5	74.2	75.7	75.7	77.2	78.5	78.2	78.5	79.0	79.5	80.0	81.0	81.5	82.2	82.2	82.2
160	74.7	75.0	77.0	77.0	76.5	77.0	78.2	78.0	80.0	80.2	80.7	81.5	80.5	82.0	84.7	86.0
200	77.2	78.2	78.7	79.2	79.2	79.5	79.7	79.5	80.0	80.7	82.0	82.0	82.5	83.0	84.0	84.2
250	81.0	81.5	81.7	81.2	80.7	80.7	80.7	80.0	79.5	81.5	83.0	83.0	82.7	82.7	83.0	84.0
315	79.2	80.0	79.7	80.0	81.2	82.2	81.7	81.5	80.7	81.5	80.7	81.5	81.5	82.7	83.0	84.0
400	77.7	77.7	78.0	79.0	80.5	80.7	79.7	79.2	79.2	79.2	79.7	79.5	80.0	81.0	80.7	81.5
500	78.2	78.5	79.5	80.5	80.7	80.2	80.5	80.0	80.2	80.0	80.5	80.2	80.0	82.0	81.2	81.2
630	79.2	79.5	81.2	80.7	80.5	80.2	80.5	80.7	79.7	80.5	80.7	81.2	82.0	81.5	82.0	81.7
800	81.5	81.0	81.2	80.5	80.2	80.5	80.7	80.5	80.2	81.2	82.0	82.2	82.2	83.0	83.0	82.2
1000	81.7	80.7	81.2	81.0	81.5	81.7	81.2	81.5	81.7	82.2	83.0	83.5	82.5	83.7	84.0	82.2
1250	77.0	78.2	80.7	82.0	82.2	82.0	82.0	82.5	82.0	82.7	82.7	83.5	83.2	83.7	84.0	82.0
1600	81.2	81.2	82.5	82.0	83.7	83.0	82.7	82.7	83.2	83.0	83.5	84.2	85.0	85.5	83.5	82.5
2000	86.0	84.7	85.2	84.5	87.2	84.5	85.5	84.7	87.2	86.0	86.7	88.0	90.0	90.2	85.0	85.2
2500	81.2	80.7	82.0	82.0	81.7	82.5	81.7	81.2	81.5	82.0	82.7	84.0	83.5	83.5	82.5	81.2
3150	80.7	80.5	82.0	81.7	82.2	82.5	81.5	81.2	81.7	82.5	83.2	85.0	86.0	84.0	83.0	81.5
4000	82.2	81.0	82.7	82.2	83.5	84.7	83.5	82.7	81.7	81.5	84.0	87.2	90.0	86.2	84.2	81.5
5000	80.5	82.0	84.5	84.0	83.0	83.0	82.5	82.0	82.2	83.5	85.7	86.5	85.7	84.5	83.5	80.0
6300	79.5	81.0	82.7	83.0	82.0	82.2	82.2	82.0	82.0	83.0	84.2	85.2	84.7	83.5	82.7	79.0
8000	81.5	82.7	84.7	83.7	82.5	82.7	82.5	82.0	81.2	81.2	82.2	85.5	84.2	84.0	83.2	79.5
10000	79.5	82.0	80.5	80.2	80.5	82.7	84.5	81.2	78.7	80.7	81.7	82.7	84.5	84.0	83.0	78.2
12500	76.7	78.5	79.0	79.5	79.0	80.0	79.2	78.0	77.0	77.7	80.0	81.2	81.2	82.0	81.2	76.2
16000	76.7	77.5	79.0	79.7	79.5	79.0	78.5	77.5	76.5	77.5	79.2	81.2	81.0	82.0	80.0	75.2
20000	74.0	75.0	76.5	78.2	76.5	77.2	76.5	74.5	74.5	75.5	78.0	79.2	79.7	80.5	78.0	73.5
25000	72.0	72.7	73.7	75.2	74.7	74.7	73.7	72.2	72.0	73.5	75.5	77.0	77.5	77.7	76.5	71.2
31500	68.2	68.7	70.2	73.0	71.0	71.0	70.0	68.5	68.2	69.5	71.5	73.2	74.5	75.0	73.5	68.5
40000	64.2	65.0	66.2	71.7	67.0	67.0	65.2	64.7	64.2	65.5	68.0	69.5	71.2	71.0	69.2	64.2
DR(A)	92.0	92.5	93.5	94.0	94.0	94.5	94.2	92.5	93.5	93.5	94.7	96.0	97.0	96.5	94.2	92.5
DR(L)	93.5	94.0	94.7	95.0	95.5	95.7	95.5	94.7	94.5	95.0	96.5	97.7	98.0	98.0	97.2	96.0
IDENT	383	382	381	380	379	378	377	376	375	374	373	372	371	370	369	368

RUN 026 19-INCH Q-FAN 38 DEGREE BLADE ANGLE 10500 RPM  
 MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1748. N ( 393. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 15.0 C ( 59.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	64.2	65.2	66.2	68.2	69.0	71.0	71.7	72.7	73.0	73.7	74.5	75.0	75.2	76.0	75.7	76.2
63	65.7	66.7	66.5	67.7	68.7	69.2	70.5	71.0	73.0	73.7	75.5	77.0	78.7	79.2	80.7	80.0
80	68.5	70.0	68.7	69.5	70.2	71.7	73.0	74.0	75.7	78.5	80.2	81.5	83.5	84.5	84.2	83.5
103	73.5	73.7	73.5	75.0	75.7	77.0	77.7	79.2	80.0	81.7	83.0	84.2	85.0	85.0	85.0	84.5
125	76.2	77.0	76.5	77.0	78.0	78.7	79.0	80.5	81.5	81.7	83.0	83.7	83.5	84.0	83.7	83.7
160	79.0	78.0	78.0	77.7	82.2	85.0	86.7	87.5	87.2	84.2	82.7	84.5	85.0	89.0	88.7	89.5
203	80.0	79.2	79.5	79.5	81.0	83.0	84.5	85.2	85.0	83.7	83.7	84.5	85.2	87.2	87.7	88.2
250	93.2	83.2	82.5	81.7	81.0	81.0	81.2	81.2	82.0	83.7	84.5	85.5	84.7	83.7	85.0	85.7
315	83.0	83.2	81.0	81.0	81.7	82.2	82.0	82.0	81.7	82.2	83.0	84.2	84.5	85.2	86.2	85.7
403	91.7	82.0	79.7	81.5	82.2	82.2	81.5	81.0	81.5	81.5	82.5	82.2	82.7	83.5	85.0	84.7
500	81.5	81.7	82.0	82.5	82.5	81.7	81.7	81.5	81.5	82.2	82.5	83.2	83.0	84.0	84.5	83.5
630	83.5	83.2	82.7	82.7	82.0	81.5	81.7	82.2	83.0	82.5	83.0	83.2	83.7	83.7	83.7	84.2
800	83.2	83.2	82.7	83.0	81.7	82.2	82.7	82.5	83.0	83.5	84.0	84.7	85.5	86.0	85.5	84.2
1000	80.5	81.2	82.2	83.0	83.5	83.2	82.7	82.7	84.5	83.7	85.2	86.0	85.7	86.5	86.5	84.7
1250	82.0	82.2	82.2	83.0	83.5	83.2	83.7	84.2	84.7	84.7	86.2	86.0	86.5	86.2	86.0	84.5
1603	83.0	84.0	83.5	83.5	84.5	84.5	84.5	84.5	84.7	84.2	85.7	86.5	86.5	86.2	85.5	83.7
2000	91.0	90.0	89.0	87.0	88.2	88.2	88.7	91.2	89.7	88.5	91.0	93.0	91.2	90.0	92.2	87.5
2503	84.2	83.7	84.7	85.2	84.5	85.0	84.5	85.0	85.0	85.0	86.7	87.7	87.0	86.2	85.5	82.7
3150	84.5	85.0	84.5	84.7	84.7	84.5	84.5	83.5	84.0	84.5	86.5	87.5	88.0	87.0	85.0	82.7
4000	87.0	85.7	87.0	86.5	90.0	91.2	90.2	87.2	89.0	88.7	89.2	91.0	92.7	90.5	86.7	85.0
5003	82.7	83.7	85.2	85.0	86.0	86.0	85.2	85.0	85.5	85.0	86.0	87.2	88.0	86.7	85.0	81.7
6300	84.5	86.5	87.0	87.5	86.7	86.0	87.7	86.7	85.5	87.2	87.7	89.5	90.7	89.5	86.5	82.5
8000	86.7	86.2	84.0	86.0	87.2	85.5	85.0	84.2	84.0	84.5	86.2	87.2	88.0	87.2	84.7	80.7
10000	82.7	83.0	83.2	82.7	83.7	84.7	86.0	84.5	83.0	82.7	84.0	87.2	86.2	86.0	84.5	79.5
12500	83.0	80.7	81.5	82.0	81.7	81.7	81.5	82.2	80.7	81.5	83.2	85.2	85.2	84.7	82.5	77.5
16003	78.5	79.7	81.0	81.2	81.5	81.5	81.2	80.5	80.5	81.5	83.7	84.2	85.2	85.2	82.5	76.7
20000	76.7	77.5	78.2	79.2	79.5	79.5	79.2	78.0	78.0	78.5	81.0	83.0	83.2	83.5	81.5	75.2
25000	74.0	74.5	76.2	76.7	77.2	77.0	76.7	75.5	75.5	76.2	78.5	80.7	81.5	81.0	78.7	72.5
31503	70.0	70.7	72.7	73.0	73.0	73.0	72.5	72.0	71.5	73.0	75.7	77.2	78.5	78.0	75.2	69.5
40000	55.5	66.7	67.7	68.5	68.7	68.7	68.5	67.5	67.5	68.7	71.7	73.0	74.7	73.7	71.2	66.0
DR(A)	96.5	96.5	96.5	96.5	97.5	97.7	97.2	97.2	96.7	96.7	98.2	99.7	100.0	98.7	97.5	95.0
DR(L)	97.2	97.2	97.2	97.2	98.2	98.7	98.2	98.2	98.5	98.0	99.5	100.5	101.0	100.5	100.0	98.5
IDENT	199	398	397	396	395	394	393	392	391	390	389	388	387	386	385	384

PUN 027 18-INCH C-FAN 52.6 DEGREE BLADE ANGLE 9385 RPM

DATE 11/27/72

TIME 11-48-31

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2607. N ( 586. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 11.7 C ( 53.0 F ) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS UNCORRECTED

EPFQ.

FREQ. HZ	C	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M															
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	68.7	67.5	69.5	70.5	72.2	74.0	75.7	76.2	77.5	77.0	77.7	78.0	78.2	79.5	79.5	79.7	
63	70.7	69.2	70.0	70.7	71.7	72.2	73.5	74.2	75.5	76.2	77.2	79.7	80.7	82.2	84.2	84.2	
80	73.0	72.0	72.2	72.7	74.2	75.0	77.0	78.5	80.0	81.0	82.5	84.2	85.2	87.0	87.0	86.5	
100	77.7	78.5	78.2	79.0	80.2	81.0	82.0	83.2	84.5	86.0	87.0	88.2	88.5	89.5	89.2	88.0	
125	79.5	80.0	80.0	81.0	82.0	83.0	83.2	84.5	85.2	85.7	86.2	86.5	87.2	87.2	87.0	86.7	
160	78.2	78.7	79.7	81.0	82.5	83.7	84.7	85.0	84.7	85.0	86.0	86.5	87.0	87.0	88.2	89.5	
200	81.2	81.7	81.5	82.5	83.2	83.2	83.5	85.0	85.5	86.5	87.5	88.0	89.2	90.0	90.7	91.0	
250	86.5	87.0	86.0	85.5	85.2	85.0	85.5	86.7	87.7	88.0	89.5	90.0	90.0	90.5	91.0	92.7	
315	85.0	85.5	85.5	85.0	86.0	86.5	86.2	87.0	87.7	88.0	88.0	89.2	90.0	89.5	89.5	90.2	
400	84.2	85.0	85.0	86.5	87.2	86.2	86.5	85.5	86.0	86.0	86.7	87.7	88.5	88.5	88.5	89.0	
500	85.7	86.0	86.0	86.5	86.7	86.5	86.5	86.5	86.7	87.2	87.0	87.7	87.7	88.5	88.5	89.0	
630	86.5	86.5	86.5	86.7	86.7	86.2	86.7	87.0	87.0	87.0	87.5	88.0	88.5	87.7	88.2	89.0	
800	84.5	85.5	86.5	86.5	86.5	87.5	87.0	87.5	87.7	88.0	88.7	89.5	90.0	89.7	88.7	91.0	
1000	85.0	84.0	86.2	87.0	87.7	87.2	87.0	88.2	88.0	89.0	90.0	90.0	90.0	90.2	89.2	91.0	
1250	85.5	84.7	86.2	87.0	87.2	87.7	88.5	88.5	89.0	89.2	89.7	90.5	90.0	90.0	89.7	88.7	
1600	87.2	87.2	88.0	88.2	88.5	88.5	90.7	89.5	90.0	90.2	91.0	92.7	91.7	91.0	89.7	88.5	
2000	90.5	90.2	93.0	95.7	92.2	93.0	99.0	93.2	94.2	97.2	97.2	100.5	99.7	98.5	95.7	91.5	
2500	85.0	85.7	87.7	88.5	88.5	88.5	88.5	88.7	89.7	90.0	91.0	92.2	91.0	90.5	89.5	87.0	
3150	86.0	86.2	86.5	87.2	87.7	88.2	87.5	88.0	89.0	89.2	90.5	93.2	92.0	91.0	89.2	87.0	
4000	85.7	89.2	89.2	89.2	89.5	91.0	89.5	88.7	91.0	91.0	90.7	93.0	95.5	91.0	89.5	87.7	
5000	84.7	84.5	86.7	87.0	87.7	87.7	88.0	88.2	87.7	89.2	89.2	90.7	90.2	89.7	87.7	85.2	
6300	84.7	85.2	87.0	87.7	87.7	88.5	88.5	89.0	89.2	90.0	90.0	91.0	90.7	90.0	88.2	85.0	
8000	85.0	85.0	86.5	86.5	87.5	88.0	87.5	88.0	88.7	88.7	90.2	90.5	89.2	89.2	87.0	83.5	
10000	82.7	83.2	85.0	85.7	85.0	86.0	86.2	86.2	86.2	86.7	88.0	89.5	88.5	87.5	85.0	82.2	
12500	81.5	82.0	82.5	83.0	83.2	84.0	84.0	83.7	84.5	85.2	86.0	87.5	86.7	86.5	83.7	80.5	
16000	80.0	80.2	82.0	83.0	83.0	83.2	83.0	82.5	83.2	84.0	85.5	86.7	86.7	86.0	83.5	79.7	
20000	77.5	78.0	79.5	80.2	81.0	80.7	80.7	81.0	81.2	82.0	83.0	84.7	84.5	83.7	81.5	78.0	
25000	76.5	75.7	77.5	78.0	78.5	78.2	78.0	78.7	78.7	79.5	81.0	82.5	82.0	81.7	79.2	76.0	
31500	71.2	71.7	73.2	73.5	74.0	74.2	74.2	74.5	75.5	76.0	77.7	79.2	79.2	78.5	76.5	72.5	
40000	70.7	68.0	69.0	69.7	70.2	70.2	70.2	70.5	71.2	72.0	73.2	75.2	75.2	75.0	72.7	69.2	
DB(A)	97.0	97.5	99.2	100.0	99.2	100.0	101.7	100.2	100.5	101.5	102.5	104.0	104.2	102.7	100.7	98.5	
DB(L)	98.5	99.0	100.0	100.7	100.0	101.0	102.5	101.2	102.0	102.7	103.2	104.7	105.0	104.5	103.2	102.0	
IDENT	415	414	413	412	411	410	409	408	407	406	405	404	403	402	401	400	

RUN 028 18-INCH Q-FAN 52.6 DEGREE BLADE ANGLE 10150 RPM DATE 11/27/72 TIME 11-48-34  
 MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2940. N ( 661. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.7 C ( 53.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS INCORRECTED

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
50	58.2	68.5	70.0	72.5	73.7	75.5	76.0	77.5	78.0	79.0	79.7	80.0	80.0	80.7	81.5	81.2
60	70.5	70.7	71.5	71.7	72.7	74.0	74.2	75.5	76.0	77.7	79.2	80.7	82.5	83.7	85.0	85.5
80	73.7	73.0	73.0	74.0	74.7	76.2	77.7	79.0	80.7	82.5	84.0	86.0	87.2	87.7	88.7	87.5
100	78.7	79.0	79.5	79.7	81.2	82.2	83.2	85.0	85.7	87.7	89.2	89.7	91.0	91.0	91.0	89.2
125	81.0	80.2	81.2	81.7	83.2	83.7	84.7	85.2	86.0	87.7	88.2	89.0	89.2	89.2	89.7	88.5
160	80.0	80.2	81.0	82.2	85.2	86.7	89.5	91.0	89.5	88.5	87.2	88.7	92.2	90.2	91.7	94.0
200	81.5	81.7	82.0	82.2	84.0	84.5	86.0	87.2	88.0	88.7	89.2	90.2	91.5	92.2	92.5	93.5
250	87.7	87.5	87.2	86.5	86.5	86.5	87.5	89.0	90.0	91.2	92.0	93.0	93.5	93.2	93.7	95.5
315	87.7	87.5	87.0	87.0	88.0	88.5	89.0	89.0	89.7	89.7	90.2	91.2	91.7	92.2	92.5	93.0
400	87.7	87.7	88.0	88.5	89.0	88.2	88.5	88.0	88.0	88.7	89.7	90.7	92.0	92.5	91.7	92.0
500	88.5	89.0	88.5	89.5	90.0	89.0	89.2	88.2	89.2	89.0	89.0	89.7	89.7	91.2	92.5	92.2
630	88.7	87.7	88.7	89.2	88.5	88.0	88.5	88.7	88.5	89.2	90.0	90.7	91.0	90.2	90.7	91.5
800	88.0	87.7	88.2	89.5	89.5	89.0	89.2	88.5	89.7	89.7	90.7	91.7	92.0	92.0	92.0	91.5
1000	88.0	87.5	88.0	89.2	89.0	89.2	89.2	89.5	90.0	90.7	92.0	92.0	92.2	92.5	91.5	90.0
1250	87.2	88.0	88.5	89.0	89.2	89.7	89.5	90.2	90.5	91.5	92.5	92.2	92.7	92.2	91.7	90.2
1600	89.2	89.5	89.7	89.2	90.0	90.2	90.7	91.5	91.2	91.7	92.7	93.5	93.2	92.5	91.7	90.0
2000	93.0	99.2	97.0	95.0	94.2	96.2	95.0	97.0	98.2	100.5	101.5	101.5	101.5	101.0	102.2	90.5
2500	88.0	89.0	89.5	90.2	90.0	90.2	90.7	91.5	91.7	92.7	93.5	94.2	93.7	93.0	92.5	88.5
3150	88.5	88.0	88.5	89.2	89.0	90.0	90.7	90.5	91.0	91.7	93.2	94.0	93.7	92.5	91.0	88.7
4000	89.2	90.0	89.0	89.2	90.2	90.0	92.5	91.5	91.2	93.0	95.7	94.0	98.0	93.2	90.7	89.2
5000	86.7	87.0	88.0	88.5	88.5	88.5	89.2	89.2	89.7	91.0	91.7	92.5	93.0	92.0	89.2	87.0
6300	88.0	88.5	90.2	89.2	90.2	90.5	90.2	90.0	91.5	92.0	92.7	93.0	93.7	92.2	89.7	87.2
8000	97.7	86.7	87.7	88.2	88.7	89.2	89.0	89.5	90.0	91.5	91.7	92.5	92.5	91.5	88.7	85.7
10000	85.7	85.7	86.0	86.5	87.0	87.0	87.0	87.2	89.0	89.7	90.7	90.7	92.0	89.5	87.7	84.2
12500	85.0	83.5	84.0	84.5	85.5	85.2	85.2	85.5	85.5	87.2	88.2	89.2	90.5	88.7	86.2	82.7
16000	83.7	82.7	84.0	83.2	83.7	84.5	84.2	85.0	85.2	86.7	87.5	89.0	89.5	88.0	85.5	81.7
20000	80.2	80.7	82.0	81.0	81.5	82.0	82.0	82.5	83.2	84.7	86.7	86.7	87.7	86.0	83.5	80.2
25000	78.0	77.7	79.0	79.0	79.5	79.7	79.5	80.2	80.7	82.5	83.5	84.5	85.2	84.2	81.7	78.0
31500	74.2	74.0	74.2	74.2	75.2	76.0	76.2	76.2	76.7	78.5	80.2	81.2	81.7	81.5	78.5	75.0
40000	70.7	69.5	69.7	70.0	70.2	70.7	71.2	72.0	72.0	74.2	76.5	77.2	77.5	76.5	74.7	78.7
DB(A)	99.5	102.0	101.0	101.0	101.2	101.5	101.2	102.0	103.0	104.5	105.5	105.7	106.2	104.7	104.7	99.5
DB(L)	101.0	102.7	102.2	102.0	102.2	102.5	102.7	103.5	104.2	105.5	106.5	106.7	107.5	106.5	106.7	104.2
IDENT	432	431	430	429	428	427	426	425	424	423	422	421	420	419	418	417

DATE 01/31/73 TIME 10-29-33

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2513. N ( 565. LB) , MICROPHONE RADIUS = 3.05 M ( 10.0 FT)  
TEST TEMPERATURE = 7.5 C ( 45.5 F) , TEST RELATIVE HUMIDITY = 60.0 PCT  
DATA IS UNCORRECTED

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 3.05 M
0	0.0
50	0.0
63	0.0
80	0.0
100	0.0
125	0.0
160	0.0
200	0.0
250	0.0
315	0.0
400	0.0
500	0.0
630	0.0
800	0.0
1000	0.0
1250	0.0
1600	0.0
2000	0.0
2500	0.0
3150	0.0
4000	0.0
5000	0.0
6300	0.0
8000	0.0
11000	0.0
12500	0.0
16000	0.0
20000	0.0
25000	0.0
31500	0.0
40000	0.0
DB(A)	0.0
DB(L)	0.0
IDENT	0



RUN 001 1R-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 6600 RPM DATE 11/27/72 TIME 11-47-10  
 MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1397. N ( 314. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 20.6 C ( 69.0 F) , TEST RELATIVE HUMIDITY = 59.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M										PWL RE 10**-13 W						
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	64.5	65.2	67.7	70.5	68.7	70.2	71.5	72.0	72.7	74.0	75.7	73.2	76.2	76.2	76.0	75.2	112.4
63	66.2	65.7	67.5	67.7	66.7	67.7	67.7	68.2	70.2	70.2	74.2	73.5	76.7	79.7	79.0	78.5	112.9
80	66.5	66.7	68.5	68.2	67.2	68.2	69.2	70.7	73.0	74.2	76.7	77.5	79.7	82.7	81.7	80.5	115.7
100	71.0	71.5	71.7	72.5	73.0	74.7	75.2	77.0	78.2	79.5	80.0	81.5	82.5	83.7	82.7	80.7	118.4
125	71.7	71.7	71.7	73.2	74.0	75.5	76.5	76.7	77.2	78.7	79.5	80.2	80.5	81.2	80.7	79.0	117.1
160	70.0	70.2	71.0	71.7	72.7	73.0	74.0	74.7	75.7	76.5	77.2	77.0	77.5	79.0	79.2	79.7	115.1
200	70.7	70.5	71.5	72.2	73.5	74.5	76.2	77.5	76.7	77.2	78.0	79.2	80.0	79.5	79.7	80.0	116.4
250	71.0	71.2	71.7	72.5	72.7	73.5	74.5	75.2	74.7	75.2	75.7	77.5	78.2	78.0	77.5	78.0	114.6
315	74.5	74.7	74.5	74.0	74.5	75.0	75.2	76.0	75.7	76.5	77.0	76.7	78.0	79.7	80.5	78.7	115.6
400	73.5	74.0	74.0	74.7	75.7	75.5	75.0	75.2	75.7	76.2	76.7	77.0	77.7	78.5	79.0	78.0	115.2
500	75.2	75.2	75.7	77.0	77.5	77.0	77.0	76.7	77.0	78.0	78.5	78.7	78.7	79.7	79.7	79.2	116.7
630	77.0	77.7	78.2	78.7	77.7	78.2	77.7	78.2	78.2	79.0	79.5	80.0	80.7	80.7	80.7	79.5	117.9
800	78.7	79.2	80.0	80.0	79.7	79.5	80.0	80.0	80.5	80.5	81.0	81.2	82.0	82.0	81.2	80.2	119.3
1000	79.7	79.7	80.5	80.5	80.7	81.2	80.5	81.0	81.5	82.0	83.0	83.5	83.5	83.5	83.2	80.2	120.8
1250	81.5	85.5	92.7	92.7	91.5	89.5	91.0	85.5	87.5	84.0	93.2	94.0	97.0	100.5	101.7	93.7	133.6
1600	81.5	81.0	84.0	84.0	84.0	83.5	84.0	83.0	84.2	84.0	85.5	86.0	87.7	89.5	90.2	83.7	124.6
2000	80.5	81.2	81.5	82.0	82.5	82.0	82.5	82.0	82.2	83.0	83.5	84.5	85.5	85.0	83.5	78.7	121.9
2500	81.5	82.5	83.0	84.2	84.2	84.0	83.0	83.0	82.7	83.7	86.0	86.5	88.0	89.0	88.0	81.2	124.2
3150	82.0	82.2	84.2	84.0	84.2	83.5	83.5	83.7	84.0	84.0	85.5	86.2	86.7	86.5	86.0	82.7	123.6
4000	82.7	82.2	82.5	81.7	81.5	81.2	82.0	82.0	81.0	81.5	83.2	83.7	86.2	85.0	85.5	79.7	121.9
5000	81.0	81.5	82.2	82.5	82.7	82.7	81.5	82.0	82.0	82.5	83.2	84.7	85.0	85.2	83.7	80.0	122.0
6300	80.5	81.0	82.0	81.7	82.5	82.0	81.5	81.5	81.5	82.2	82.7	83.5	83.7	85.0	84.5	81.7	121.7
8000	80.3	79.1	79.1	79.6	79.3	79.3	78.6	78.6	78.1	78.6	80.3	81.6	81.8	83.3	83.1	76.1	119.3
10000	79.8	78.6	79.1	79.3	79.1	78.3	77.3	77.1	76.8	77.8	78.6	81.1	81.3	82.1	83.6	74.8	118.7
12500	75.9	77.2	77.4	77.7	77.7	77.4	76.4	75.9	75.2	75.7	76.9	78.7	79.2	79.9	79.9	72.9	116.9
16000	76.0	76.5	77.3	77.8	77.5	77.0	76.0	75.8	75.0	75.3	76.3	78.5	78.8	79.8	78.8	73.0	116.9
20000	73.5	74.5	76.0	75.7	75.7	75.0	75.0	73.5	73.0	73.5	74.5	76.0	77.0	77.2	76.2	70.2	115.3
25000	72.4	72.9	73.2	73.9	74.2	72.9	72.7	71.7	70.9	71.7	72.2	74.2	74.9	75.7	74.2	68.7	114.0
31500	68.0	69.0	70.2	70.5	70.5	69.5	68.7	67.7	66.7	68.0	69.2	70.7	72.0	73.0	71.0	65.5	111.6
40000	65.0	65.5	66.3	66.3	66.3	65.5	64.8	63.8	63.0	64.3	65.5	67.0	68.5	69.0	67.8	62.3	109.5
DB(A)	92.6	93.1	96.2	96.3	95.8	94.9	95.3	93.7	94.2	94.0	97.3	98.0	100.1	102.5	103.3	96.3	136.7
DB(L)	92.8	93.2	96.0	96.2	95.7	94.9	95.3	94.0	94.5	94.4	97.3	98.1	100.0	102.3	103.1	96.7	136.7
PWL	106.0	106.0	107.6	107.6	107.7	107.3	107.3	107.2	107.5	107.7	109.3	110.1	111.6	113.4	113.9	108.1	
FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS																	
PWL	92.0	97.9	101.4	103.8	104.9	106.1	106.7	107.3	107.7	109.2	109.5	110.3	111.1	109.9	101.9		
PWL	91.7	101.4	104.9	106.8	107.3	109.0	107.8	108.9	108.2	112.2	112.6	114.1	115.7	114.9	105.8		

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	92.0	97.9	101.4	103.8	104.5	106.1	106.7	107.3	107.7	109.2	109.5	110.3	111.1	109.9	101.9		
PWL	91.7	101.4	104.9	106.8	107.3	109.0	107.8	108.9	108.2	112.2	112.6	114.1	115.7	114.9	105.8		

RUN 002 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 6639 RPM

DATE 11/27/72 TIME 11-47-13

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1428. N ( 321. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 18.3 C ( 65.0 F) , TEST RELATIVE HUMIDITY = 38.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FRFQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 W
50	68.0	68.2	67.5	68.2	70.0	70.7	72.0	73.7	74.7	76.7	76.0	80.0	79.7	76.7	76.2	79.7	114.8
63	68.2	68.5	67.7	68.7	70.0	69.7	71.0	71.7	73.2	75.0	76.5	79.5	80.0	79.0	78.7	81.7	115.2
80	70.0	69.7	69.7	70.0	70.7	71.7	72.2	74.5	76.5	78.2	79.0	82.0	82.0	83.0	82.7	83.2	117.9
100	74.0	74.2	74.2	75.0	75.7	77.0	77.7	79.5	80.5	82.0	83.0	85.0	85.2	85.2	84.0	83.7	120.8
125	74.7	74.7	75.0	75.7	77.2	78.5	78.7	79.7	80.5	81.5	81.7	84.2	84.0	83.2	82.7	83.5	120.1
160	74.2	74.5	75.2	75.5	76.7	77.0	77.7	78.5	79.0	79.7	80.0	81.0	81.2	80.7	82.0	83.5	118.4
200	79.0	79.0	79.2	79.7	79.5	79.7	79.5	79.7	80.2	81.0	81.5	82.5	83.0	83.0	84.5	85.5	120.3
250	79.2	80.0	80.5	79.7	79.0	79.2	78.7	78.7	79.5	80.5	81.7	83.0	83.0	82.7	83.2	83.5	119.9
315	77.0	77.0	78.0	77.5	78.0	79.0	79.5	79.5	79.5	80.0	81.0	80.7	81.0	82.0	82.7	82.7	119.0
400	76.5	76.0	76.5	76.7	78.0	78.2	78.0	78.5	78.7	79.0	79.0	80.0	79.7	80.2	80.7	81.2	117.7
500	76.7	76.5	77.7	78.7	79.5	79.0	79.5	79.2	79.0	80.0	80.2	80.2	80.0	80.0	81.2	81.2	118.4
630	77.0	77.5	78.7	79.0	79.2	78.5	79.0	79.2	79.7	80.0	81.0	81.0	81.2	81.0	81.0	80.7	118.7
800	79.7	80.2	80.5	80.2	80.0	79.5	80.0	80.0	81.0	81.5	81.5	81.7	82.5	82.0	81.7	81.2	119.7
1000	81.0	80.7	81.0	81.5	81.2	81.5	81.2	81.0	82.2	82.7	83.7	83.7	84.0	83.5	82.5	81.2	121.1
1250	89.2	86.5	88.0	91.0	87.5	90.2	87.5	85.2	85.2	84.5	91.5	90.5	98.2	99.2	96.2	90.5	131.6
1600	82.5	82.0	83.0	83.5	82.7	84.2	83.5	83.5	83.5	83.2	85.0	85.2	88.5	89.0	86.7	82.7	123.9
2000	80.7	82.0	82.0	82.0	82.2	82.7	83.2	82.7	82.5	83.0	84.5	85.0	86.2	85.5	83.0	80.7	122.4
2500	83.2	85.0	86.0	87.5	84.7	84.5	83.7	83.0	84.2	84.7	87.2	88.5	90.5	89.5	87.2	84.5	125.5
3150	81.1	81.1	82.1	82.6	82.3	82.3	82.1	82.1	82.3	83.3	84.3	86.1	87.1	85.1	83.8	81.1	122.6
4000	83.1	81.3	82.6	82.8	81.6	83.1	83.6	82.3	81.8	82.3	83.6	85.1	87.1	84.8	84.3	79.6	122.5
5000	81.1	81.6	81.6	82.1	82.3	81.6	82.1	81.8	83.1	82.8	84.6	84.6	85.6	85.1	83.1	79.6	122.2
6300	80.4	81.4	81.7	80.9	81.7	80.7	81.4	81.4	81.7	82.4	83.2	83.9	84.9	83.4	83.2	79.9	121.4
8000	80.4	79.9	79.9	79.4	79.6	79.4	79.4	78.9	78.6	79.9	80.9	82.1	82.6	82.4	80.9	76.9	119.4
10000	79.1	78.1	79.3	79.3	78.8	79.1	78.8	77.3	77.3	77.8	79.6	81.1	82.6	81.8	80.6	75.6	118.7
12500	75.5	76.3	77.3	77.3	77.0	77.0	76.5	75.8	75.0	75.8	78.0	78.8	80.3	79.5	77.5	73.5	116.8
16000	75.4	75.9	76.4	76.7	76.9	76.2	75.7	74.9	74.9	75.4	76.9	78.2	79.2	79.2	77.2	72.7	116.4
20000	72.6	74.1	74.3	74.3	75.1	74.6	73.8	73.1	73.1	73.6	74.8	76.1	77.1	76.6	74.6	70.3	114.8
25000	70.8	71.6	72.6	72.8	72.8	72.8	71.8	70.8	70.6	71.3	72.8	73.8	75.1	75.1	72.6	68.6	113.5
31500	68.1	68.6	69.9	70.1	69.9	69.6	68.9	67.9	67.6	68.4	70.4	71.6	72.9	72.1	70.1	66.6	111.8
40000	65.2	65.7	66.2	66.5	66.7	66.2	66.0	65.2	64.7	65.5	66.7	69.0	70.0	69.7	67.5	64.5	110.5
DR(A)	94.4	93.8	94.7	96.0	94.4	95.3	94.5	93.8	94.1	94.4	97.0	97.3	101.2	101.5	99.1	94.9	135.9
DR(L)	94.6	94.2	95.0	96.0	94.8	95.6	95.0	94.5	94.9	95.4	97.5	98.1	101.3	101.6	99.5	96.8	136.4
PWL	107.1	107.4	108.2	109.0	107.7	107.9	107.8	107.2	107.8	108.3	110.2	111.2	112.9	112.9	111.1	108.3	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	91.4	98.5	102.8	103.8	105.5	106.6	106.6	107.6	108.3	110.0	110.6	111.6	110.6	110.6	107.2	102.1	
PWL	93.1	100.5	105.7	105.6	108.0	108.3	106.6	107.6	108.3	112.4	112.6	115.6	114.9	111.0	104.9		

RUN 005 1R-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 8765 RPM DATE 11/27/72 TIME 11-47-16

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2371. N ( 533. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 16.1 C ( 61.0 F ) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FRFQ HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 W
50	68.2	69.0	70.5	72.7	73.7	74.7	76.7	77.5	78.0	81.7	78.2	79.2	79.5	80.0	80.0	80.5	117.1
63	70.2	71.0	71.5	72.2	73.5	73.5	74.5	75.2	76.5	80.5	78.0	80.7	82.2	83.7	83.5	84.5	118.4
80	72.7	72.7	73.7	74.0	74.7	75.7	77.2	79.5	80.7	83.0	83.2	85.0	86.2	87.2	88.0	86.7	122.1
100	78.0	78.5	79.0	79.7	80.7	82.0	82.7	84.2	85.2	87.0	88.0	89.2	90.2	90.0	89.7	88.5	125.7
125	80.0	80.0	81.0	82.0	83.0	84.2	85.0	86.0	86.5	86.7	87.0	88.0	89.0	88.2	88.0	88.0	125.2
160	79.0	79.0	80.0	81.2	81.7	82.5	83.5	83.7	84.7	86.0	86.2	87.2	87.5	88.7	89.7	90.0	124.8
200	82.0	82.0	82.2	82.7	82.7	83.0	83.7	85.0	86.5	87.0	88.2	89.2	89.7	91.2	92.5	92.7	126.8
250	87.5	87.7	87.5	86.5	85.7	85.7	86.0	87.2	88.0	89.5	90.5	91.0	91.2	91.5	92.2	93.5	128.3
315	86.5	86.2	86.0	86.0	86.5	86.7	86.2	87.2	87.5	88.2	89.0	89.5	90.2	91.0	91.5	91.7	127.4
400	84.5	85.0	85.0	86.7	87.0	86.7	86.7	86.2	86.5	87.0	87.5	87.7	89.0	90.0	90.2	91.0	126.5
500	85.5	85.5	86.2	86.5	86.5	86.7	86.5	86.7	87.2	88.2	88.0	87.5	87.7	88.5	89.2	89.5	126.2
630	86.5	86.5	86.5	87.2	87.0	86.5	86.5	87.0	87.2	88.0	88.0	88.5	88.7	88.7	89.0	89.2	126.4
800	85.0	85.7	87.0	87.5	87.5	87.2	87.2	88.2	88.2	88.2	89.2	89.5	90.0	90.2	89.2	89.0	127.2
1000	84.5	85.0	86.5	88.0	88.0	88.0	88.5	88.5	89.0	90.0	90.2	90.7	91.2	91.0	90.0	88.5	128.1
1250	85.0	85.5	86.5	88.2	88.5	88.5	89.2	89.5	89.7	90.2	91.0	91.2	91.5	91.0	90.0	88.2	128.6
1600	92.0	90.5	90.5	91.0	96.2	98.2	98.7	99.0	100.0	96.0	95.5	99.5	101.5	100.5	97.0	91.5	136.9
2000	91.7	90.7	91.0	91.0	95.7	97.5	98.2	98.5	99.2	95.5	95.5	99.0	101.0	100.0	96.5	90.5	136.4
2500	87.0	87.7	89.0	90.0	90.0	89.7	89.5	89.5	90.5	91.0	92.5	93.2	93.0	91.7	89.7	87.0	129.7
3150	88.5	92.2	90.0	90.0	90.2	89.7	90.5	90.2	92.5	91.7	92.7	94.2	95.0	93.2	90.2	88.0	130.8
4000	87.2	90.2	89.0	88.7	89.7	88.7	89.5	89.5	90.7	91.0	91.5	92.5	93.2	92.5	89.7	87.0	129.6
5000	87.3	86.6	90.1	89.3	90.1	90.6	91.8	90.8	91.3	91.1	91.5	93.1	95.6	93.1	90.1	86.8	130.5
6300	88.1	86.6	87.8	87.8	91.1	90.3	89.6	89.8	90.3	90.8	91.8	91.6	92.6	91.1	89.1	85.1	129.4
8000	86.7	85.9	87.4	87.4	89.2	88.7	88.7	89.2	88.9	89.7	91.4	90.4	91.9	90.4	87.4	83.7	128.5
10000	86.1	85.6	87.6	87.4	87.6	86.1	86.6	85.9	86.6	88.6	89.6	89.6	90.9	89.1	86.9	82.6	127.1
12500	82.5	83.2	83.5	85.0	86.0	85.5	85.5	85.5	84.7	86.0	87.7	88.0	88.7	88.2	85.0	80.7	125.7
16000	82.0	82.0	82.8	83.0	84.3	83.8	84.3	84.0	84.0	85.5	85.8	87.3	88.8	87.3	84.3	80.3	125.0
20000	79.8	80.6	81.1	81.8	82.1	81.6	81.8	81.6	81.8	82.6	83.6	85.1	86.1	85.3	82.1	78.1	123.2
25000	77.2	77.5	79.0	79.7	79.7	79.5	79.7	79.5	79.7	80.5	81.7	83.0	84.5	83.5	80.7	76.5	121.9
31500	74.1	74.1	75.4	75.9	76.6	76.4	76.1	76.1	76.4	77.6	79.1	80.4	81.4	80.4	77.6	73.6	119.9
40000	70.8	70.8	72.1	72.6	72.8	73.3	72.6	73.1	73.1	74.6	76.1	77.1	78.6	77.8	74.6	70.8	118.4
DB(A)	99.9	100.3	100.5	100.8	103.1	104.0	104.5	104.7	105.5	103.6	104.0	106.1	107.6	106.5	103.7	100.4	143.4
DB(L)	100.3	100.6	101.0	101.3	103.1	103.8	104.3	104.5	105.3	104.0	104.5	106.2	107.5	106.7	104.8	102.9	143.6
PWL	113.1	114.6	114.1	114.3	116.1	116.9	117.4	117.6	118.4	116.9	117.3	119.2	120.7	119.8	117.4	114.2	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PNI	98.6	104.4	108.1	112.2	114.5	116.1	117.1	118.2	116.9	117.2	118.7	119.4	117.4	113.5	108.0
PNI	99.7	105.0	108.1	113.5	116.3	117.8	118.7	120.1	117.9	117.2	120.1	121.1	119.1	114.8	108.0

PUN 006 1P-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7881 RPM

DATE 11/27/72 TIME 11-47-19

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2042. N ( 459. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 16.1 C ( 61.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M										PWL RE 10**--13 M						
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	67.5	68.7	69.7	71.7	72.5	74.7	75.2	76.0	77.0	77.2	77.2	77.7	77.2	77.7	79.0	78.7	115.2
63	69.0	69.5	70.0	71.7	72.5	73.0	73.0	74.7	75.0	76.7	77.2	78.5	80.2	81.2	82.0	82.2	116.4
80	71.7	71.0	71.7	72.7	73.5	74.5	75.5	77.7	79.0	80.7	82.2	83.2	85.0	86.2	85.7	84.7	120.5
100	75.7	75.7	77.0	78.7	79.2	80.5	82.0	82.0	83.5	85.0	85.0	86.2	87.5	87.7	87.5	86.7	123.4
125	77.7	77.5	78.0	79.7	81.0	82.2	83.2	84.5	85.5	86.2	85.7	86.5	87.2	86.2	85.7	86.5	123.7
160	77.0	77.0	77.7	78.2	79.5	80.2	80.7	82.0	82.7	83.2	83.7	84.0	84.2	85.2	86.7	88.2	122.1
200	81.0	81.2	81.5	82.0	81.7	82.0	82.0	82.5	84.2	84.7	85.2	86.0	86.7	88.0	89.2	89.5	124.0
250	85.2	85.5	85.2	85.5	84.5	83.7	83.7	83.5	84.7	86.2	87.5	88.0	88.0	87.5	88.0	90.0	125.1
315	83.0	83.0	82.5	83.0	83.5	83.7	84.2	84.7	85.0	84.7	85.7	86.0	86.5	87.7	88.0	88.0	124.2
400	80.7	81.2	81.2	83.0	84.5	83.5	83.7	84.0	83.7	83.7	84.7	84.5	85.0	85.5	86.7	86.7	123.1
500	81.5	81.7	83.2	83.7	84.0	83.7	83.7	83.7	83.7	84.5	85.0	85.0	85.0	85.5	85.7	85.7	123.1
630	83.2	83.2	83.5	84.0	84.0	83.5	83.5	84.2	84.5	85.0	85.0	86.0	86.0	85.7	86.0	86.0	123.5
800	84.2	84.5	84.2	84.5	84.2	85.0	84.7	84.7	85.5	85.7	85.7	87.0	87.7	87.2	86.5	86.5	124.5
1000	82.7	83.0	84.2	85.2	86.0	85.5	85.0	85.2	86.2	87.2	87.2	88.5	88.2	88.0	87.0	86.0	125.4
1250	83.0	83.5	84.7	85.7	86.5	87.7	86.7	88.2	87.7	89.0	90.5	90.5	89.7	89.5	88.7	86.5	127.2
1600	94.2	93.0	90.7	91.2	94.0	101.5	95.0	101.5	99.7	102.5	105.0	105.2	102.0	101.7	101.0	95.7	140.2
2000	86.7	87.5	87.5	87.0	87.2	88.5	87.5	89.0	88.5	90.0	90.7	91.5	90.5	90.5	88.7	86.2	128.0
2500	86.2	86.5	87.0	87.0	86.7	87.0	86.5	87.2	87.2	88.0	88.5	90.0	89.7	89.2	87.5	84.5	126.7
3150	87.5	90.5	91.7	92.7	87.7	88.0	86.0	88.0	88.5	89.5	90.7	90.7	94.5	91.0	90.2	85.7	129.1
4000	84.2	85.0	85.7	86.5	86.2	85.7	85.5	86.0	86.0	86.5	87.5	89.0	89.7	88.5	86.2	84.2	125.9
5000	85.6	87.1	86.1	88.6	88.1	86.6	87.8	88.8	87.3	88.6	88.1	89.3	89.3	88.8	87.3	83.8	126.9
6300	89.1	94.6	86.3	89.6	86.8	86.6	87.3	87.6	88.6	88.3	88.6	89.1	90.3	88.1	87.3	84.6	127.1
8000	83.4	84.7	83.7	85.4	84.9	84.7	86.4	86.7	86.2	86.4	87.2	87.7	88.9	86.9	85.7	80.9	125.5
10000	85.4	81.9	83.4	84.1	83.9	84.1	83.9	82.6	83.4	83.9	85.1	87.4	86.9	87.4	85.1	79.9	124.0
12500	80.2	81.0	82.5	81.5	82.2	82.7	82.0	81.5	81.5	82.0	83.0	84.2	85.5	85.5	83.0	77.7	122.3
16000	79.3	80.3	82.8	81.5	81.3	81.8	82.3	80.3	80.0	81.3	82.3	84.5	85.0	84.3	82.0	77.3	121.9
20000	77.6	78.3	79.6	79.1	79.6	79.1	78.6	78.6	78.3	79.3	79.8	82.1	83.1	82.1	79.8	75.1	120.2
25000	75.0	75.5	76.0	77.5	76.7	77.5	77.2	75.7	75.7	77.0	78.2	79.5	80.5	80.2	77.5	73.5	118.6
31500	71.6	71.9	72.9	73.4	73.9	73.6	72.4	72.6	72.6	73.6	75.4	76.1	78.1	77.4	74.1	70.9	116.5
40000	58.3	68.8	69.6	70.3	70.6	70.1	70.3	69.6	69.8	71.1	72.3	73.8	74.8	74.3	71.8	68.3	115.1
DB(A)	99.1	99.0	98.9	99.8	99.6	103.8	100.0	103.9	102.7	104.9	106.9	107.3	105.3	104.6	103.8	99.7	142.9
DB(L)	99.2	99.1	99.1	100.0	99.8	103.3	100.3	103.5	102.5	104.5	106.4	106.7	105.1	104.6	103.9	101.2	142.6
PWL	112.2	112.7	113.3	114.4	112.7	116.3	113.3	116.6	115.8	117.5	119.2	119.7	118.3	117.8	117.0	113.6	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	96.8	103.7	108.2	108.8	113.9	112.0	116.0	115.6	117.5	119.0	119.1	117.0	115.4	113.1	107.5		
PWL	99.3	105.5	110.2	111.2	118.4	114.6	120.3	119.5	121.9	123.8	123.8	121.0	119.3	117.2	110.6		

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	96.8	103.7	108.2	108.8	113.9	112.0	116.0	115.6	117.5	119.0	119.1	117.0	115.4	113.1	107.5
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PWLT	99.3	105.5	110.2	111.2	118.4	114.6	120.3	119.5	121.9	123.8	123.8	121.0	119.3	117.2	110.6
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RUN 007 18-INCH C-FAN 52.6 DEGREE BLADE ANGLE 7063 RPM DATE 11/27/72 TIME 11-47-22

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1450. N ( 326. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.7 C ( 53.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10** -13 W
50	64.2	65.7	66.7	68.2	69.0	71.2	72.0	73.2	73.7	74.2	75.5	74.0	75.5	76.0	75.2	75.2	112.4
63	65.2	66.5	66.7	68.2	67.5	69.0	70.5	71.2	73.0	74.0	75.5	76.5	77.7	79.2	79.7	79.2	113.9
80	67.7	67.7	67.7	68.7	69.5	70.7	71.7	74.0	75.7	78.0	78.5	80.7	81.7	83.5	83.0	82.0	117.5
100	72.0	72.2	73.2	74.0	74.7	76.5	78.0	78.7	79.7	81.5	82.2	83.0	83.7	84.0	83.2	82.0	119.6
125	74.0	74.5	74.7	76.0	76.2	77.7	78.7	79.5	81.0	81.5	81.7	82.0	83.2	83.2	82.5	82.2	119.5
160	74.5	74.0	74.7	75.5	76.5	77.5	79.0	79.5	79.0	79.2	80.0	80.0	79.5	81.0	82.0	84.2	118.0
200	78.2	78.2	78.7	79.2	79.0	79.5	79.5	79.5	79.7	80.7	81.5	82.2	82.0	83.0	84.0	84.2	119.8
250	81.0	81.0	81.0	80.5	80.0	79.5	79.2	79.5	79.7	81.0	82.7	83.0	83.7	83.0	83.5	83.5	120.3
315	77.5	77.0	78.0	77.7	78.5	78.7	79.7	80.0	79.7	80.0	80.2	80.7	81.2	81.7	82.0	82.7	118.9
400	77.2	77.0	76.7	77.7	78.5	79.0	78.5	79.0	79.0	79.0	80.0	79.7	80.5	80.5	80.5	81.5	118.1
500	77.2	77.5	78.5	79.2	80.0	79.5	79.2	79.2	79.5	79.7	80.0	81.0	80.0	80.7	81.5	81.5	118.6
630	77.5	78.7	79.0	79.5	79.7	79.5	79.2	79.5	80.0	80.5	80.7	81.5	81.0	80.7	81.2	81.2	118.9
800	79.7	80.0	80.0	80.5	80.0	79.7	80.2	80.5	80.5	81.2	81.7	82.2	82.7	82.2	82.0	81.5	119.8
1000	80.7	80.2	80.5	80.7	81.0	81.5	81.0	81.2	82.5	82.5	83.0	83.5	83.2	83.5	82.7	81.5	120.9
1250	80.7	83.0	85.7	87.2	86.5	82.2	85.7	86.7	87.0	85.7	86.2	87.0	85.2	85.7	88.0	84.5	124.6
1600	82.0	84.5	88.0	89.5	87.7	83.2	88.0	86.0	89.0	87.0	87.5	88.5	86.0	86.0	89.5	85.5	126.1
2000	81.7	81.7	82.2	82.0	82.2	83.0	83.0	83.0	83.0	83.2	84.0	84.5	85.5	85.2	83.2	81.5	122.2
2500	83.2	83.2	87.5	85.7	84.0	82.7	82.2	82.0	82.7	83.2	83.7	87.0	86.0	86.0	84.7	81.2	123.1
3150	83.3	84.1	89.8	87.6	85.1	83.3	82.1	82.8	82.8	83.6	84.1	88.1	87.1	86.6	85.8	81.8	124.0
4000	80.1	81.6	84.1	84.8	81.6	82.8	81.6	82.1	81.1	82.1	84.1	84.1	86.3	85.8	83.8	80.6	122.3
5000	80.3	80.3	82.1	83.6	82.1	81.6	83.1	82.6	82.3	82.6	83.6	83.6	85.1	84.1	82.1	79.1	121.8
6300	80.4	80.7	82.9	84.4	82.4	81.7	83.2	83.4	82.4	83.4	83.9	84.4	84.9	84.2	82.9	80.2	122.3
8000	80.5	80.3	80.8	81.0	81.8	79.3	79.3	79.3	78.8	80.0	81.5	84.3	83.3	82.5	81.5	77.5	120.2
10000	78.5	78.2	80.0	79.2	78.5	79.5	79.0	78.7	77.5	78.2	78.5	81.2	81.5	81.5	80.0	76.0	118.6
12500	76.0	78.0	77.8	79.0	78.0	78.3	77.8	76.5	75.5	77.0	77.8	79.3	80.8	80.5	79.0	74.5	117.5
16000	76.1	75.6	76.1	78.1	77.3	77.1	77.1	76.1	75.1	75.8	77.8	78.8	80.3	79.8	78.6	73.8	117.2
20000	72.4	73.1	74.4	75.4	74.6	74.6	74.6	73.6	72.4	73.9	75.6	76.4	77.9	77.6	75.9	71.9	115.3
25000	71.0	73.5	71.7	72.5	73.0	72.0	72.0	71.2	70.5	72.0	73.5	74.5	75.2	75.2	74.2	69.7	113.7
31500	66.6	66.6	67.9	69.1	68.6	68.4	68.4	67.6	67.6	68.4	69.6	71.6	72.4	72.4	70.1	66.9	111.4
40000	62.2	62.2	63.9	63.9	64.9	64.7	64.7	63.7	64.2	64.7	66.7	67.7	68.9	69.2	66.9	63.7	109.3
DR(A)	92.8	93.6	96.7	96.7	95.2	93.7	94.8	94.3	95.3	95.0	95.7	97.1	96.7	96.4	96.5	93.6	134.3
DR(L)	93.4	94.0	96.5	96.6	95.5	94.4	95.3	95.0	95.8	95.8	96.5	97.7	97.6	97.6	97.6	95.7	135.1
PWL	106.7	107.3	110.9	110.1	108.6	107.4	107.7	107.7	108.3	108.4	109.1	111.3	110.9	110.6	110.1	107.4	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	91.4	101.2	103.9	104.6	105.1	106.5	107.1	108.2	108.4	109.0	110.7	109.6	108.3	106.2	101.2		
PWL	91.6	102.7	105.8	105.7	105.1	107.7	107.1	109.5	108.4	109.0	110.7	109.6	108.3	107.5	101.2		

PUN 009 18-INCH Q-FAN 52.6 DEGREE BLADE ANGLE 8311 RPM

DATE 11/27/72 TIME 11-47-28

MODEL DIAMETER = 0.457 M ( 1.50 FT) ; MODEL THRUST = 2024. N ( 455. LB) ; MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.7 C ( 53.0 F) ; TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M										PWL RE						
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	10**--13
50	66.0	67.0	68.5	69.7	71.5	74.0	74.7	74.7	76.0	76.5	77.2	77.5	77.2	78.5	78.5	78.7	114.8
63	57.7	67.5	68.5	69.2	71.0	71.7	73.0	73.0	75.0	75.2	77.0	78.2	79.7	81.5	82.2	82.2	116.1
80	70.5	69.7	70.7	71.2	72.5	74.0	75.7	77.0	79.0	80.2	82.0	83.2	84.7	85.7	86.2	84.7	120.3
100	74.2	74.5	75.2	77.0	78.5	79.5	80.5	81.5	83.0	84.5	85.5	87.0	87.5	87.5	87.5	86.5	123.2
125	76.7	77.0	77.5	78.7	80.5	81.2	81.7	83.2	84.5	84.7	85.5	85.7	86.0	85.5	86.0	85.7	122.8
160	76.2	76.2	77.0	77.7	78.5	79.2	81.0	81.5	82.0	82.7	83.7	83.5	84.2	85.5	86.2	87.5	121.7
200	80.5	80.2	80.5	81.2	81.0	81.5	81.5	82.2	83.2	83.7	85.0	85.7	86.2	87.5	88.7	89.5	123.5
250	85.5	85.2	84.5	84.2	83.7	83.2	82.5	83.7	84.5	86.0	86.5	87.7	87.0	87.0	87.5	89.5	124.5
315	83.0	82.2	82.5	82.7	82.7	83.5	83.2	84.2	84.5	84.5	85.2	85.2	86.7	87.7	87.7	88.0	123.9
400	81.2	81.0	81.2	83.0	83.5	83.5	83.0	83.5	83.2	83.5	84.2	83.7	85.5	85.5	86.5	87.0	122.8
500	81.0	81.5	82.7	83.2	83.5	83.2	83.0	83.2	84.0	85.0	84.7	84.7	84.5	84.7	85.5	86.2	122.8
630	82.7	82.7	83.0	83.7	84.0	83.2	83.2	83.5	84.2	84.7	85.0	85.5	85.2	85.5	85.7	86.0	123.2
800	83.5	83.2	83.5	84.0	83.7	84.0	83.7	84.0	85.0	85.2	85.7	86.0	87.0	87.0	85.7	85.5	123.8
1000	91.2	82.2	83.2	84.5	84.7	84.5	84.7	85.5	86.2	86.5	87.0	87.2	88.0	87.7	87.0	85.7	124.8
1250	81.5	81.7	83.7	85.2	85.2	85.2	86.2	86.2	87.0	87.7	88.0	88.0	89.0	87.7	87.0	85.2	125.6
1600	86.7	87.7	86.2	89.7	88.7	88.7	97.2	90.5	95.2	97.5	96.7	97.5	100.0	99.2	93.5	85.5	134.6
2000	85.7	86.2	87.0	86.5	86.7	87.0	86.5	88.0	89.0	89.5	90.2	91.0	91.5	88.7	86.7	84.5	127.9
2500	84.7	85.2	86.5	86.7	85.7	86.5	86.2	86.5	87.2	87.7	88.5	89.5	89.2	88.7	86.7	84.5	126.2
3150	87.6	92.1	88.8	86.6	91.3	90.1	87.8	88.1	89.3	88.1	90.3	90.8	92.6	93.3	89.6	85.6	128.8
4000	83.1	84.8	85.8	85.8	86.1	85.3	85.3	85.8	86.3	86.3	87.6	88.1	89.3	88.6	86.6	83.6	125.5
5000	83.6	84.3	85.1	86.6	86.1	87.3	87.1	86.3	86.3	86.6	87.6	88.8	89.1	88.8	87.1	83.6	126.1
6000	88.4	85.4	88.2	86.9	87.7	87.4	86.9	87.2	87.9	88.2	88.4	89.2	90.2	88.7	87.2	84.4	126.9
8000	84.3	83.5	83.0	85.0	85.5	86.8	85.8	84.5	84.0	85.3	85.8	88.8	88.0	87.5	84.5	81.0	125.0
10000	81.0	81.5	83.2	82.5	84.5	83.7	82.5	82.7	82.5	83.5	84.5	86.0	87.2	86.7	84.7	80.2	123.5
12500	80.0	80.5	81.3	81.5	81.8	81.5	81.3	81.3	81.5	82.3	83.3	84.8	85.8	85.0	83.0	78.3	122.1
16000	77.3	79.3	79.6	80.8	81.1	81.1	80.6	80.3	80.6	81.3	82.3	84.1	85.8	85.3	82.3	78.3	121.9
20000	76.4	76.9	78.1	78.6	78.6	79.1	77.9	78.4	78.6	79.1	80.1	81.6	83.1	82.6	80.1	75.6	120.1
25000	73.5	74.2	75.0	76.0	76.2	76.0	76.5	76.2	76.0	77.0	78.5	80.0	80.7	80.5	78.2	74.2	118.5
31500	70.4	70.4	71.4	71.9	72.6	73.1	73.4	72.6	73.4	73.9	75.6	76.9	77.6	77.1	74.9	71.6	116.4
40000	66.4	66.4	67.7	68.2	68.9	68.7	68.9	68.9	69.9	70.9	72.2	73.4	74.4	73.9	71.7	68.4	114.5
DR(A)	96.6	97.8	97.5	97.9	98.6	98.4	100.9	98.4	100.3	101.5	101.6	102.4	103.9	103.4	99.9	96.8	139.6
DB(L)	97.2	97.9	97.9	98.3	98.9	98.9	100.8	99.0	100.5	101.6	101.8	102.7	104.0	103.6	101.3	99.6	140.0
PWL	110.6	112.8	111.6	111.1	113.2	112.8	114.0	112.1	113.5	114.7	114.9	115.7	117.1	116.7	113.9	111.2	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PNI	96.8	102.0	104.9	109.3	110.4	112.7	111.6	113.4	114.7	114.7	115.1	115.9	114.3	110.0	105.0
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PNI	99.2	102.7	106.2	111.1	111.8	115.8	112.7	115.8	117.7	117.3	117.8	119.1	117.6	112.0	105.0
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RUN 009 18-INCH O-FAN 52.6 DEGREE BLADE ANGLE 8895 RPM DATE 11/27/72 TIME 11-47-31

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2344. N ( 527. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.7 C ( 53.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M													PWL RE 10**--13 W			
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	66.5	67.2	69.2	71.5	73.5	74.5	75.7	76.0	77.2	78.0	78.0	78.7	78.7	79.0	79.7	80.0	116.0
63	69.0	68.7	69.2	71.0	72.0	73.2	74.0	74.5	75.7	76.2	77.7	79.5	81.2	83.0	83.7	83.7	117.4
80	71.0	71.0	71.7	72.7	73.7	75.0	76.7	78.0	80.0	81.5	83.2	84.7	86.0	87.0	87.2	86.7	121.6
100	75.7	75.5	76.7	78.0	79.5	80.7	82.2	83.0	84.5	85.5	87.0	88.0	88.7	89.2	88.7	88.0	124.6
125	77.5	78.0	79.0	80.0	81.5	82.7	83.2	84.7	85.0	85.7	86.2	86.7	87.0	87.5	87.0	87.0	123.9
160	78.0	77.5	78.2	79.0	80.0	80.7	81.7	83.0	83.7	84.7	85.2	85.5	85.7	87.2	88.2	89.0	123.4
200	80.2	80.5	81.0	81.5	82.0	82.5	82.5	84.2	84.7	85.5	86.5	87.5	88.2	89.5	90.2	90.7	125.1
250	86.0	86.0	85.5	84.7	84.2	83.7	84.0	85.5	86.0	87.7	88.5	89.5	89.7	89.2	90.2	91.5	126.4
315	84.0	84.0	83.7	83.7	84.7	85.5	85.5	86.0	86.5	86.2	87.0	88.2	89.5	89.7	90.0	90.0	126.0
400	82.7	83.2	84.0	84.5	85.5	85.7	85.7	85.2	85.0	85.5	86.0	86.7	87.5	88.5	88.7	89.2	125.0
500	83.5	83.7	84.0	84.7	85.0	85.5	85.0	85.2	86.0	86.5	86.2	86.7	86.5	87.0	87.7	88.0	124.7
630	85.0	85.2	84.7	85.2	85.0	84.7	85.0	85.5	85.7	86.7	87.0	87.2	87.5	87.0	87.2	87.2	124.9
800	83.5	84.0	85.2	85.2	86.2	86.0	85.7	86.0	86.5	86.7	87.7	88.0	88.5	88.5	88.0	87.7	125.7
1000	82.5	83.2	84.5	86.2	86.7	86.5	86.5	87.0	87.7	88.0	88.7	89.5	89.7	89.7	88.5	87.2	126.6
1250	84.0	84.0	85.0	86.2	87.2	87.2	87.7	87.7	88.5	89.0	89.7	90.0	90.2	89.5	88.5	87.0	127.2
1600	90.5	88.0	88.0	90.2	92.5	95.0	89.7	95.2	93.0	90.5	92.7	94.2	95.7	95.0	92.5	89.0	131.9
2000	92.5	88.7	89.2	91.5	93.7	97.0	91.0	97.2	95.0	91.5	94.0	96.0	97.2	97.0	94.2	90.2	133.6
2500	95.7	86.2	88.0	89.0	88.2	88.5	88.0	88.2	89.0	89.7	90.7	91.5	91.0	90.5	88.5	86.2	128.2
3150	86.6	89.1	89.6	92.1	93.1	92.8	91.3	90.1	89.3	89.6	90.8	92.6	94.6	93.3	89.1	87.6	130.3
4000	86.3	89.6	90.3	92.1	93.6	93.3	92.1	89.6	88.1	89.3	90.1	91.6	95.1	93.8	88.1	87.8	130.4
5000	84.8	85.8	86.8	87.3	89.1	89.1	87.6	88.1	88.6	88.8	89.8	92.1	92.1	90.8	88.1	86.1	128.3
6300	95.7	84.8	85.7	87.7	89.2	88.2	88.2	88.4	88.9	89.7	90.4	90.7	90.9	89.9	88.2	84.4	128.0
8000	85.8	83.8	85.3	86.8	88.3	87.3	86.5	87.3	87.3	88.3	90.3	89.8	90.3	88.0	86.3	82.5	127.1
10000	84.0	83.0	84.5	84.7	85.2	86.2	85.2	84.7	85.2	87.0	87.0	88.0	89.0	87.2	84.7	81.0	125.4
12500	79.8	80.8	83.0	83.0	83.3	83.8	84.5	82.8	82.8	85.0	85.8	88.0	87.3	86.3	83.5	79.8	124.1
16000	78.6	80.6	82.1	82.1	83.3	82.8	82.8	82.1	82.3	84.1	84.8	85.6	87.8	86.1	83.1	79.1	123.7
20000	77.1	78.1	79.6	80.4	80.9	80.4	80.4	80.4	80.1	81.1	82.6	83.6	85.4	84.1	81.9	77.1	122.0
25000	74.0	75.7	77.2	78.2	78.5	78.5	78.5	78.0	78.7	79.5	81.0	82.2	83.2	82.2	79.5	75.7	120.7
31500	70.4	71.6	73.4	74.1	74.9	74.6	74.9	74.6	75.4	76.6	77.9	79.1	79.6	78.9	76.1	72.9	118.4
40000	56.4	67.4	68.7	70.2	70.2	70.9	70.9	70.9	71.7	72.9	74.4	75.4	75.9	75.4	73.2	70.2	116.3
DB(A)	98.9	98.4	99.1	100.8	102.1	103.2	100.6	102.7	101.6	100.9	102.2	103.6	104.7	104.0	101.4	99.3	141.0
DB(L)	99.1	98.7	99.4	100.8	102.0	102.9	100.9	102.6	101.9	101.7	102.9	104.0	105.0	104.5	102.8	101.7	141.5
PWL	112.4	112.4	113.2	114.7	115.9	116.4	114.8	116.2	115.2	114.5	115.7	117.1	118.4	117.7	115.5	113.4	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	96.4	103.5	108.5	112.0	114.0	113.5	115.7	115.1	114.5	115.5	116.5	117.1	115.3	111.6	107.2		
PWLT	97.0	104.0	108.5	113.1	116.1	114.6	117.8	116.4	114.5	115.5	117.6	118.6	116.9	112.8	107.2		

MODEL DIAMETER = 0.457 W ( 1.50 FT) , MODEL THRUST = 1423. N ( 320. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
TEST TEMPERATURE = 13.9 C ( 57.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M																	PWL RE 10**-13 M
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150		
50	64.0	64.2	66.0	68.0	69.0	70.0	71.7	72.7	73.5	73.7	74.5	75.5	74.5	75.2	75.7	75.7	111.9	
63	65.7	65.0	65.7	66.5	68.0	68.7	69.5	70.7	71.5	74.2	75.0	76.5	78.0	79.5	79.5	80.5	114.0	
80	67.0	67.5	68.0	68.0	68.5	70.2	72.0	73.5	75.7	77.5	78.7	80.2	81.2	82.7	83.0	83.0	117.3	
100	71.5	71.2	71.5	73.0	74.0	75.5	77.0	78.7	79.5	81.2	82.2	83.0	84.0	84.0	83.5	82.5	119.6	
125	74.0	73.7	74.7	75.5	76.5	77.5	79.0	81.2	82.5	84.0	83.5	83.0	84.2	84.7	83.2	83.7	120.9	
160	74.0	74.5	74.5	75.7	75.7	76.7	77.5	78.5	78.7	79.7	79.7	79.7	80.0	80.5	82.0	83.5	117.9	
200	77.7	77.7	78.7	78.7	78.7	79.0	79.0	79.2	80.0	80.5	80.2	81.2	81.7	83.2	83.5	84.0	119.4	
250	81.7	81.7	81.5	81.0	80.5	79.7	79.0	78.5	79.5	80.5	82.5	84.5	84.0	84.5	83.5	85.5	120.8	
315	77.0	77.0	77.2	77.7	78.5	79.0	79.5	79.7	80.0	80.0	80.0	80.2	81.0	82.0	83.2	83.5	119.0	
400	76.7	76.7	76.7	77.7	78.5	78.5	78.5	78.5	78.7	79.0	79.5	79.0	79.2	80.2	80.7	81.2	117.7	
500	76.0	76.2	77.2	78.5	79.2	79.0	79.2	78.7	79.2	79.2	79.7	80.0	79.7	80.0	81.0	81.0	118.1	
630	76.7	77.5	78.2	78.5	78.7	78.7	79.5	79.0	79.7	81.0	80.7	81.2	81.7	81.5	81.5	81.0	118.3	
800	79.2	79.2	79.7	79.5	79.0	78.7	79.5	79.5	79.7	81.5	82.2	82.5	82.0	82.0	82.2	80.7	119.1	
1000	79.5	79.5	79.7	79.5	79.7	80.0	80.0	80.7	81.5	82.7	83.0	83.2	83.5	83.2	83.0	81.0	119.9	
1250	77.2	78.2	79.7	80.5	81.5	81.0	82.0	82.5	82.7	82.7	83.0	83.2	83.5	83.2	83.0	81.0	121.0	
1600	84.0	85.7	85.5	85.7	85.2	84.2	90.7	88.5	87.7	88.7	87.5	90.7	89.5	90.5	88.7	84.2	127.1	
2000	79.5	80.0	80.5	80.5	81.2	81.5	82.5	82.5	82.7	82.7	83.0	84.0	84.0	83.0	81.7	80.7	121.2	
2500	79.7	80.2	80.7	81.5	80.2	81.0	80.5	80.5	81.0	82.0	83.0	83.5	83.5	83.0	81.5	80.0	120.6	
3150	81.7	80.5	81.0	86.5	83.5	83.5	82.0	81.7	82.0	83.7	85.0	84.2	85.2	84.5	83.2	81.0	122.4	
4000	79.6	79.8	80.1	80.6	80.6	80.1	81.1	80.1	79.6	80.6	81.1	82.6	85.1	83.3	81.3	79.3	120.1	
5000	91.1	79.3	81.6	81.1	82.3	82.6	83.6	82.3	82.3	83.1	82.8	83.8	85.1	84.6	81.8	80.3	121.8	
6300	80.7	78.7	83.2	81.9	80.9	81.9	81.7	82.2	83.2	82.9	83.4	83.7	84.7	83.9	84.2	80.2	121.8	
8000	79.3	77.8	78.5	79.8	79.5	79.8	79.5	79.0	78.0	79.3	80.3	80.5	81.8	81.0	79.5	76.8	118.7	
10000	77.9	77.1	78.4	79.9	78.6	79.6	78.4	76.6	76.6	78.1	79.6	79.9	82.4	82.1	79.9	75.1	118.5	
12500	74.1	78.3	76.6	78.1	77.1	76.8	75.8	74.8	75.3	76.1	77.8	73.8	79.8	79.8	77.8	74.1	116.8	
16000	73.9	74.9	75.6	76.1	76.4	75.9	75.4	74.4	74.9	75.4	77.4	78.1	78.9	78.6	77.6	73.4	116.2	
20000	71.0	72.5	73.5	73.8	73.3	73.5	74.0	72.0	72.5	73.3	75.3	76.8	76.8	76.5	75.8	71.5	114.6	
25000	69.2	69.7	70.4	70.9	70.4	70.4	70.9	69.7	70.2	70.9	72.2	73.2	75.2	74.7	72.9	68.9	112.7	
31500	65.2	66.2	66.4	67.2	66.7	66.9	67.2	66.2	66.7	67.4	68.9	70.2	71.7	71.2	69.4	66.2	110.3	
40000	61.4	62.1	62.6	64.4	62.9	62.6	63.9	62.6	63.6	64.6	65.6	66.9	68.1	67.9	66.4	63.4	108.5	
DB(A)	71.9	92.1	92.8	93.8	93.2	93.2	95.1	94.1	94.1	94.8	94.9	96.1	96.2	96.2	95.0	92.7	133.5	
DR(1)	72.6	92.8	93.5	94.3	93.8	93.9	95.4	94.7	94.9	95.7	96.0	97.0	97.3	97.4	96.6	95.6	134.5	
PWL	175.7	105.2	106.0	108.4	107.1	107.2	108.5	107.5	107.4	108.2	109.0	109.7	109.9	109.9	108.7	106.9		

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

	89.3	96.3	102.2	103.2	104.8	107.2	106.9	107.2	108.2	108.8	109.1	108.6	107.5	104.8	108.7
PNL															
PNLT	91.5	98.1	103.9	104.4	104.8	110.0	109.0	108.9	110.2	110.3	111.5	110.5	110.0	106.9	101.8



PUN 011 18-INCH C-FAN 47.1 DEGREE BLADE ANGLE 8874 RPM DATE 11/27/72 TIME 11-47-38  
 MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1944. N ( 437. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 13.9 C ( 57.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**13 W
50	65.0	67.2	67.7	71.0	71.5	72.5	74.2	75.5	75.5	76.2	77.2	77.2	77.7	78.0	79.0	79.0	114.8
63	68.0	68.0	68.5	70.2	70.0	71.7	73.0	74.0	74.7	75.5	77.7	78.7	80.7	81.7	82.5	82.7	116.6
80	69.7	70.2	71.5	71.2	72.0	73.7	74.5	77.2	78.5	81.0	82.0	83.2	84.5	86.0	86.2	86.0	120.4
100	73.7	74.0	75.0	76.2	77.5	79.0	80.0	81.0	82.2	84.0	85.5	86.5	87.0	87.2	87.2	86.2	122.8
125	76.2	76.7	77.2	78.5	79.7	80.7	81.2	82.5	83.7	84.5	85.2	85.0	85.7	85.5	85.5	85.2	122.4
160	76.0	76.5	76.7	78.0	78.5	79.5	80.0	81.0	82.2	83.5	84.0	83.7	84.2	85.2	86.2	87.0	121.7
200	80.0	80.0	80.5	81.0	80.7	81.0	81.2	82.2	82.7	83.0	84.0	85.0	85.5	87.0	88.0	88.7	122.9
250	84.0	84.2	84.0	83.0	82.7	82.0	82.0	82.5	83.5	84.5	86.2	86.5	87.0	86.0	87.0	88.5	123.7
315	87.2	82.0	82.0	82.5	83.0	83.5	83.0	84.0	84.7	83.7	84.2	85.0	86.2	87.7	87.7	88.0	123.6
400	90.2	80.5	80.7	82.0	83.2	83.0	83.0	83.0	83.0	83.2	83.7	83.5	84.5	86.0	86.5	87.0	122.6
500	80.0	80.5	81.5	83.0	82.5	82.5	82.7	83.0	83.2	83.5	84.5	83.7	83.7	84.2	85.0	85.2	122.2
630	82.5	82.7	82.5	82.2	83.0	82.2	82.7	82.5	83.5	84.0	84.5	84.7	85.0	84.5	85.0	85.7	122.5
800	82.5	82.7	82.5	82.7	82.2	83.2	82.7	83.0	84.2	84.7	85.0	85.5	86.2	86.0	85.2	85.5	123.1
1000	80.0	81.2	82.2	83.0	84.0	83.7	83.7	84.0	84.5	85.2	86.0	86.2	86.5	86.5	85.7	84.7	123.7
1250	80.0	80.2	82.5	84.0	84.2	84.5	85.0	85.2	85.7	86.5	86.7	87.0	87.0	87.0	86.2	84.5	124.4
1600	83.2	83.5	85.0	85.0	86.0	87.7	87.5	88.5	88.2	87.5	89.5	91.0	91.0	90.5	92.0	86.0	127.3
2000	85.0	84.7	86.2	86.7	86.2	89.0	88.5	90.0	89.0	88.5	88.5	91.0	92.2	92.2	93.5	85.7	128.5
2500	82.7	83.2	84.5	85.0	84.5	85.0	85.2	85.5	86.0	86.0	87.0	88.0	87.7	87.5	85.5	83.5	124.9
3150	83.0	85.5	84.7	86.5	85.7	85.2	85.2	85.2	85.2	85.2	87.0	88.2	88.2	87.2	86.5	83.7	125.3
4000	83.3	85.1	85.3	86.3	86.1	85.6	85.1	85.1	85.1	85.6	86.6	87.6	88.6	87.6	86.3	84.1	125.1
5000	81.6	82.8	85.1	87.1	86.6	88.3	86.8	86.1	85.6	86.1	86.1	87.1	88.6	87.3	86.3	83.8	125.5
6300	82.7	83.7	85.2	85.7	86.4	86.2	86.4	86.7	87.2	87.7	88.2	88.2	89.2	87.4	85.9	82.9	126.0
8000	82.5	83.3	84.3	85.0	85.3	84.5	83.8	84.3	84.0	84.8	85.3	86.5	88.8	86.0	83.8	80.3	124.2
10000	80.6	80.9	82.4	82.6	83.4	82.4	82.4	82.4	81.6	83.1	83.6	85.4	87.1	85.6	82.4	79.4	122.8
12500	77.6	78.8	80.1	81.8	81.8	81.1	80.6	80.6	80.1	80.6	81.8	82.8	85.6	83.6	81.1	77.6	121.2
16000	76.4	78.6	80.1	80.9	80.4	80.9	80.1	79.6	79.1	80.1	81.6	82.9	83.6	83.6	81.1	77.4	120.8
20000	75.3	76.0	77.0	78.0	77.8	77.5	77.8	77.3	77.5	78.5	79.5	80.8	81.8	81.3	79.8	75.0	119.1
25000	71.9	73.7	75.2	75.2	75.4	74.9	75.4	74.9	75.4	75.9	77.9	78.7	79.7	79.4	76.7	73.4	117.6
31500	69.4	69.7	71.2	71.9	71.7	72.2	72.2	71.9	72.2	73.2	74.4	75.4	76.2	76.2	73.9	70.4	115.4
40000	66.1	66.6	67.6	68.4	67.9	67.4	68.4	68.4	68.6	69.6	71.4	72.6	73.6	73.4	70.9	67.9	113.8
DB(A)	94.3	95.1	96.0	96.9	96.9	97.6	97.3	97.8	97.7	97.9	98.4	99.5	100.5	99.8	99.9	96.3	137.1
DB(L)	95.2	95.9	96.7	97.5	97.6	98.1	97.9	98.4	98.5	98.9	99.5	100.4	101.4	101.0	101.0	99.2	138.1
PWL	107.9	109.2	109.7	110.6	110.5	111.2	110.6	111.3	111.1	111.6	112.2	113.1	114.1	113.7	113.9	110.4	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	93.2	100.0	104.4	106.6	108.9	109.4	110.8	111.0	111.6	112.0	112.6	112.8	112.8	111.4	110.0	104.2	
PWL	93.7	100.0	104.4	106.6	108.9	109.4	110.8	111.0	111.6	112.0	112.6	112.8	112.8	112.4	111.8	104.2	

P/N 012 18-INCH C-FAV 62.5 DEGREE BLADE ANGLE 6136 RPM

DATE 11/27/72 TIME 11-47-41

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1294. N ( 291. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.1 C ( 52.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M

PWL RE  
10\*\*-13 W

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	64.0	64.7	65.2	66.5	67.7	69.7	70.5	71.5	72.2	72.0	72.7	73.5	74.5	74.2	75.2	75.2	111.0
60	65.7	65.7	66.2	66.7	67.5	68.0	70.0	70.2	71.2	73.0	74.7	76.0	77.0	79.2	78.7	79.2	113.3
70	68.0	68.0	69.2	69.2	70.5	71.5	73.0	74.0	75.7	77.5	79.7	81.5	81.5	82.5	82.2	82.0	117.0
80	73.7	73.7	74.5	75.2	76.2	77.2	79.5	80.5	82.5	83.0	83.7	84.7	85.0	85.0	83.7	82.7	121.0
90	74.7	75.7	76.2	77.0	78.2	78.5	79.2	80.2	81.0	81.7	81.7	82.5	83.0	83.2	83.0	83.0	119.8
100	76.7	76.7	78.0	77.5	78.7	79.2	80.0	80.2	81.0	80.2	80.5	81.0	81.7	82.2	83.0	84.2	119.4
110	80.0	80.0	81.2	80.5	80.7	81.0	81.0	81.0	82.2	83.0	83.5	83.0	84.5	83.7	85.5	85.0	121.4
120	81.0	81.0	81.2	80.5	80.2	80.5	80.0	79.7	80.0	81.0	82.5	83.0	83.2	83.2	83.7	84.2	120.4
130	77.7	77.7	78.2	78.2	78.7	79.2	79.5	79.7	80.7	80.2	80.2	81.0	81.5	82.0	82.7	82.5	119.1
140	78.0	78.0	77.7	78.5	79.5	79.2	79.0	78.7	80.0	80.0	80.0	80.5	81.0	81.2	81.2	81.5	118.6
150	79.0	79.7	80.5	80.0	80.0	80.5	80.7	80.2	80.2	81.0	80.7	81.5	81.7	82.0	82.0	81.5	119.5
160	80.7	81.2	81.5	81.7	81.2	81.2	81.2	80.7	81.2	82.2	82.2	82.5	83.5	83.2	83.0	81.7	120.6
170	82.5	82.2	82.5	83.2	83.0	82.7	82.5	81.7	82.7	83.2	84.7	86.0	86.2	86.5	85.7	83.0	122.8
180	85.0	85.0	86.0	86.5	89.7	89.7	94.0	87.7	92.0	85.5	95.7	96.0	98.5	99.7	98.7	92.5	133.5
190	82.5	82.7	83.2	83.2	83.2	83.2	83.0	82.7	83.0	83.5	84.0	85.0	85.7	85.7	84.5	82.0	122.5
200	84.0	85.2	86.7	88.2	88.7	88.7	84.7	83.0	83.2	84.2	86.2	87.7	88.5	87.2	85.5	82.7	125.2
210	82.6	83.3	83.1	83.3	83.3	83.3	82.8	82.3	82.1	83.1	83.3	85.3	86.6	85.8	83.6	80.1	122.5
220	82.1	87.8	85.8	84.6	82.8	84.6	84.1	82.3	82.8	82.6	83.6	84.8	85.8	85.3	83.1	79.6	122.8
230	82.6	84.1	82.8	84.6	86.1	84.1	82.8	81.8	82.8	82.8	83.6	85.8	86.6	85.8	82.6	79.1	123.0
240	81.7	82.9	82.9	84.9	85.4	84.4	81.7	80.7	80.2	81.4	82.2	82.9	86.2	84.2	82.2	78.2	122.0
250	82.4	81.9	82.4	82.4	81.9	82.1	81.6	80.1	78.6	80.1	81.4	82.1	84.6	84.1	81.4	76.6	120.7
260	81.5	80.7	81.7	81.5	81.0	80.0	79.2	78.5	77.7	78.0	79.0	81.0	82.0	82.0	80.0	75.7	119.1
270	79.3	80.8	80.5	81.3	80.3	80.3	79.0	77.5	76.5	76.3	76.8	79.5	80.5	81.0	78.5	73.5	118.4
280	80.1	80.1	80.8	80.6	79.8	78.8	78.6	76.6	75.6	76.3	76.8	78.3	80.1	79.8	78.1	73.1	117.9
290	78.2	78.5	78.7	79.0	78.0	77.5	76.2	74.5	73.7	74.2	75.5	76.2	77.7	78.5	76.0	71.0	116.5
300	76.5	77.2	77.0	77.2	76.5	76.0	74.5	72.7	71.2	71.7	73.2	74.5	76.2	76.2	74.0	70.0	115.4
310	74.1	74.4	74.6	74.4	73.6	72.6	71.6	69.9	69.4	69.4	70.4	71.4	73.9	73.9	71.4	66.9	113.7
320	70.8	71.3	71.1	71.1	70.6	69.3	67.6	66.1	65.1	65.6	66.3	68.1	70.6	70.6	68.8	64.1	111.8
330	94.2	95.4	95.7	97.4	96.7	96.6	97.3	94.4	96.0	94.7	98.6	99.4	101.2	101.8	100.6	95.7	136.9
340	95.0	95.6	96.3	97.6	97.0	96.9	97.6	95.3	96.6	95.8	98.9	99.7	101.4	101.9	100.9	97.2	137.3
PNL	107.5	109.8	109.2	110.2	110.4	110.4	109.2	107.5	108.2	108.3	110.5	111.3	113.0	113.3	112.1	108.2	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PNL 93.8 99.6 104.0 106.5 108.0 107.9 107.0 108.1 108.3 110.4 110.8 111.7 110.9 108.2 102.0

PNLT 95.1 101.4 107.2 108.6 110.2 111.7 108.8 111.1 108.9 114.2 114.3 115.9 115.5 112.7 105.4

PUN 013 18-INCH C-FAN 62.5 DEGREE BLADE ANGLE 7391 RPM DATE 11/27/72 TIME 11-47-44

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 1842. N ( 414. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 11.1 C ( 52.0 F ) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 W
50	56.5	67.5	68.7	70.2	71.7	73.0	74.0	74.7	75.2	75.7	76.7	77.2	77.2	77.7	78.5	78.5	114.4
63	68.0	68.7	68.7	70.0	70.7	71.5	73.5	73.7	75.2	76.0	77.0	78.7	79.7	82.0	82.2	82.7	116.4
80	71.5	71.2	71.7	72.2	73.0	74.7	76.5	77.5	79.0	80.2	81.5	83.5	84.7	86.0	86.0	85.7	120.4
100	76.0	77.2	77.5	78.7	79.2	80.7	82.2	83.2	83.7	85.5	86.2	86.2	87.5	87.7	87.2	86.5	123.6
125	78.5	79.0	80.2	81.5	82.5	83.0	83.7	85.5	86.5	87.5	87.5	87.2	87.7	88.2	88.0	87.0	124.9
160	78.5	79.2	79.5	80.5	81.0	81.5	82.0	83.0	84.0	83.7	84.5	85.0	85.7	86.7	87.2	88.7	125.1
200	82.5	83.2	83.7	84.2	84.2	85.2	85.7	86.2	87.0	88.5	89.5	90.5	89.5	89.2	90.0	91.0	125.8
250	86.7	87.0	86.5	86.5	86.2	85.7	85.0	85.7	86.0	86.5	86.5	87.2	87.7	88.5	89.0	88.7	126.9
315	84.2	84.7	84.2	84.5	84.7	85.0	85.0	85.7	86.0	86.5	86.5	87.2	87.7	88.5	89.0	88.7	125.2
400	81.7	82.2	82.7	83.7	84.5	84.0	84.2	84.5	84.7	85.0	85.5	85.7	86.2	86.0	87.0	87.7	123.8
500	82.5	83.0	84.2	85.0	85.0	85.0	84.2	85.2	85.5	86.0	86.5	86.5	87.5	86.0	86.5	86.5	124.3
630	83.2	84.2	84.7	85.2	85.2	85.2	85.7	86.5	86.2	87.0	87.5	88.5	88.5	88.2	87.5	86.5	125.6
800	85.0	85.7	85.5	86.0	85.7	86.0	85.7	86.5	86.2	87.0	87.5	88.5	89.0	89.2	88.0	86.5	126.4
1000	84.7	85.5	86.2	86.5	87.2	87.0	86.2	87.2	87.0	88.0	88.5	89.5	89.5	89.2	88.0	86.5	126.4
1250	85.5	86.2	86.5	87.0	87.0	87.5	87.5	88.0	89.5	90.2	90.2	91.7	91.0	90.7	89.5	87.5	128.0
1600	88.2	89.7	91.0	89.5	90.5	91.2	91.7	90.5	97.0	94.2	96.0	98.2	97.0	95.7	94.0	94.7	133.5
2000	86.5	87.2	87.7	88.0	88.0	88.5	87.7	88.7	88.0	89.0	89.5	91.0	91.0	90.2	88.0	84.5	127.8
2500	87.0	87.0	88.0	89.5	87.7	88.2	88.5	87.7	88.7	89.0	89.5	91.0	91.0	92.1	90.6	86.6	130.9
3150	87.6	87.8	90.6	93.3	90.1	88.6	93.8	90.6	94.6	91.1	90.1	95.1	93.3	92.1	90.6	86.6	127.8
4000	85.1	86.6	90.1	88.6	90.1	88.8	88.1	87.6	87.3	88.6	88.6	89.6	90.8	90.1	87.1	84.3	127.4
5000	85.3	86.1	89.3	88.1	89.8	88.8	87.8	87.8	86.8	87.8	88.6	89.6	90.7	89.4	87.7	82.9	128.0
6300	85.7	86.7	88.4	88.4	90.2	88.2	87.7	89.4	87.7	88.4	90.9	90.9	90.7	89.4	87.7	82.9	128.0
8000	86.4	89.4	87.4	87.1	87.1	86.9	85.9	85.6	85.9	86.4	87.6	87.9	89.4	88.9	85.9	81.1	126.0
10000	84.7	85.2	86.2	85.5	85.7	85.7	84.7	84.5	83.5	85.0	86.5	87.0	87.7	88.0	84.2	79.7	124.9
12500	84.5	84.5	85.8	84.5	85.0	85.3	85.0	83.0	82.3	83.0	84.0	85.8	87.3	86.0	83.3	78.5	123.9
16000	83.3	84.1	84.1	84.6	84.8	84.1	83.6	82.6	82.1	82.6	83.6	84.6	85.6	84.8	82.3	78.1	123.3
20000	82.2	82.5	82.5	82.7	82.5	82.7	81.7	80.5	80.0	80.5	81.7	83.2	84.0	83.5	80.5	76.2	122.0
25000	80.7	81.0	81.0	80.7	81.2	80.5	79.5	78.2	78.0	78.5	79.5	80.7	82.0	82.0	78.7	74.7	120.7
31500	78.1	78.4	78.9	78.6	78.6	77.9	77.1	75.9	74.6	75.4	76.4	78.1	79.6	79.1	75.9	72.4	119.1
40000	74.6	74.6	75.6	75.6	75.3	74.6	73.6	72.8	71.8	72.8	73.3	74.6	76.3	76.3	73.3	70.1	117.5

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PNL	96.2	104.2	108.9	110.0	110.9	114.0	113.5	116.0	114.8	115.2	117.1	115.7	113.9	110.9	107.3
PNLT	97.2	105.5	110.3	110.0	112.0	115.9	113.5	118.8	116.6	117.2	119.4	117.8	115.7	112.7	110.0

PUN 016 1R-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7796 RPM

DATE 11/27/72 TIME 11-47-48

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 1842. N ( 414. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 8.9 C ( 48.0 F ) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ, HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**--13 M
50	71.7	71.7	71.7	71.7	71.5	73.7	74.5	75.5	75.2	76.5	77.5	76.7	77.2	77.5	78.5	78.5	114.7
63	70.2	70.2	70.2	70.2	71.0	72.7	73.0	74.2	75.5	75.7	77.5	79.5	80.0	81.7	82.0	82.0	116.4
80	72.2	72.2	72.2	72.2	73.5	74.7	76.5	77.7	79.0	80.5	82.0	83.5	85.0	85.5	86.0	86.0	120.5
100	78.5	78.5	78.5	78.5	79.7	81.2	81.5	83.0	83.2	84.5	86.0	87.2	87.2	87.2	87.2	87.2	123.5
125	80.5	80.5	80.5	80.5	81.5	82.0	82.7	84.5	85.5	86.0	86.0	87.5	88.0	87.0	86.5	86.5	124.0
160	79.0	79.0	79.0	79.0	81.2	81.0	81.0	82.0	82.5	82.7	83.7	85.5	85.7	86.0	87.7	87.7	122.6
200	82.7	82.7	82.7	82.7	83.7	83.0	82.5	84.2	84.5	85.5	86.0	87.0	87.2	88.0	89.5	89.5	124.6
250	86.0	86.0	86.0	86.0	85.0	84.5	84.7	84.5	85.0	86.5	88.0	89.0	87.7	87.5	88.2	88.2	125.3
315	83.0	83.0	83.0	83.0	83.2	84.0	84.0	84.7	85.0	85.0	85.5	86.5	86.5	87.2	87.7	87.7	124.1
400	83.0	83.0	83.0	83.0	84.7	84.0	83.2	84.2	83.7	84.2	84.5	85.5	85.7	85.2	86.7	86.7	123.3
500	83.7	83.7	83.7	83.7	83.7	84.0	83.5	83.5	83.7	84.7	85.2	86.0	85.0	85.5	86.2	86.2	123.3
630	84.0	84.0	84.0	84.0	83.5	83.5	83.2	84.2	83.7	85.0	85.5	86.2	85.5	85.2	86.2	86.2	123.4
800	84.2	84.2	84.2	84.2	83.7	84.0	84.2	84.7	85.0	85.0	86.2	86.2	86.5	86.7	86.2	86.2	124.0
1000	85.0	85.0	85.0	85.0	84.7	85.2	85.2	85.0	85.7	86.5	88.0	87.0	87.5	87.2	86.2	86.2	124.9
1250	85.2	85.2	85.2	85.2	85.5	86.7	86.2	87.5	87.7	88.7	91.2	89.2	88.7	88.0	88.2	88.2	126.7
1600	90.5	90.5	90.5	90.5	92.5	98.5	93.5	99.0	98.5	101.7	106.0	101.5	100.5	99.2	99.7	99.7	139.0
2000	86.5	86.5	86.5	86.5	86.0	87.0	87.0	87.2	88.0	88.5	91.2	89.2	89.0	88.5	87.0	87.0	126.9
2500	86.5	86.5	86.5	86.5	85.2	86.2	86.5	87.0	86.7	87.0	89.5	88.7	88.7	88.0	86.0	86.0	126.1
3150	92.8	92.8	92.8	92.8	88.3	88.3	88.6	88.3	87.8	89.3	91.8	93.3	93.3	90.3	88.6	88.6	129.3
4000	86.6	86.6	86.6	86.6	85.1	86.3	86.1	85.8	85.6	86.6	88.3	88.3	88.3	88.1	86.8	86.8	125.8
5000	89.7	89.7	89.7	89.7	87.4	89.7	89.7	89.4	87.9	88.7	90.2	90.2	89.4	87.9	86.4	86.4	127.8
6300	90.5	90.5	90.5	90.5	86.8	87.0	87.3	87.8	88.3	88.0	89.5	88.8	89.0	88.3	87.0	87.0	127.2
8000	87.4	87.4	87.4	87.4	85.4	86.1	85.9	85.4	86.4	85.9	87.4	86.9	89.9	86.6	84.6	84.6	125.7
10000	84.3	84.3	84.3	84.3	84.3	84.6	84.3	83.8	83.6	85.1	85.8	86.8	87.8	86.3	84.1	84.1	124.3
12500	82.9	82.9	82.9	82.9	82.1	82.4	82.4	81.1	81.9	82.6	84.1	84.1	85.1	84.6	84.4	84.4	122.6
16000	82.7	82.7	82.7	82.7	81.9	81.9	81.7	81.2	81.2	81.4	83.2	83.7	84.7	83.7	80.9	80.9	122.1
20000	80.4	80.4	80.4	80.4	80.2	79.9	79.4	79.2	79.4	79.9	81.7	81.2	83.2	81.7	80.7	80.7	120.7
25000	78.0	78.0	78.0	78.0	77.5	77.5	78.0	76.7	77.0	77.7	80.0	79.7	80.5	79.7	85.2	85.2	120.6
31500	74.6	74.6	74.6	74.6	73.8	74.3	74.1	73.3	74.1	74.3	76.3	76.3	77.3	76.3	79.6	79.6	117.7
40000	70.8	70.8	70.8	70.8	69.8	70.1	70.1	70.1	70.8	71.1	73.1	72.8	73.8	72.8	78.6	78.6	116.4
DB(A)	99.9	99.9	99.9	99.9	98.7	101.8	99.6	102.2	101.9	104.2	107.9	104.6	104.1	102.8	102.7	102.7	142.0
DB(L)	100.2	100.2	100.2	100.2	99.3	101.7	100.0	102.1	101.9	103.9	107.3	104.6	104.2	103.2	103.2	103.2	142.0
PNL	114.5	114.5	114.5	114.5	112.2	114.9	112.8	115.3	115.1	117.0	120.1	117.7	117.3	116.3	116.2	116.2	
FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS																	
PNL	98.5	104.9	108.3	108.2	112.6	111.5	114.7	114.9	117.0	119.9	117.2	116.1	113.9	112.2	110.0		
PNLT	100.6	106.9	110.4	110.5	116.4	113.8	118.6	118.5	121.4	124.9	121.3	119.9	117.6	116.3	114.0		

RJN 017 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7796 RPM DATE 11/27/72 TIME 11-47-51

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 1904. N ( 428. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 8.9 C ( 48.0 F ) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 W
50	66.7	67.7	67.7	67.7	67.7	72.5	74.0	76.7	79.0	79.0	81.7	78.2	81.7	79.2	79.7	79.7	116.9
63	68.2	68.0	68.0	68.0	68.0	72.0	72.7	73.5	75.0	75.0	80.7	79.5	83.0	81.2	83.0	83.0	117.7
80	71.5	70.7	70.7	70.7	70.7	73.7	76.0	78.7	80.0	80.0	82.7	83.2	85.2	85.7	86.0	86.0	120.6
100	77.2	77.0	77.0	77.0	77.0	80.5	81.7	82.5	84.5	84.5	86.5	86.5	87.5	87.7	87.0	87.0	123.5
125	78.0	78.0	78.0	78.0	78.0	82.0	83.5	85.0	86.0	86.0	86.7	86.2	87.2	86.2	85.7	85.7	123.7
160	78.0	78.0	78.0	78.0	78.0	80.7	81.2	82.5	83.5	83.5	84.2	84.5	85.5	85.5	87.0	87.0	122.3
200	82.0	82.2	82.0	82.2	82.2	82.7	82.7	84.0	85.5	85.5	86.2	86.5	87.2	88.5	89.5	89.5	124.6
250	86.2	86.7	86.7	86.7	86.7	85.0	84.7	85.0	86.0	86.0	88.0	88.5	88.2	87.7	88.5	88.5	125.6
315	83.0	83.0	83.0	83.0	83.0	83.7	84.5	84.7	85.2	85.2	85.5	86.5	86.2	87.7	88.0	88.0	124.2
400	81.0	81.5	81.5	81.5	81.5	84.0	83.5	84.5	84.0	84.0	85.0	84.5	86.2	86.0	86.5	86.5	123.2
500	82.0	82.0	82.0	82.0	82.0	84.0	83.7	83.7	84.5	84.5	85.2	84.7	84.7	85.2	85.7	85.7	122.9
630	83.5	83.2	83.2	83.2	83.2	83.5	83.7	83.7	84.5	84.5	85.5	85.2	85.5	85.7	85.7	85.7	123.2
800	83.7	84.0	84.0	84.0	84.0	84.2	84.7	84.7	85.0	85.0	86.0	86.2	87.0	86.7	86.2	86.2	124.0
1000	82.7	83.2	83.2	83.2	83.2	85.5	84.7	85.2	85.7	85.7	87.0	87.2	87.2	87.5	87.0	87.0	124.6
1250	83.7	83.5	83.5	83.5	83.5	87.0	86.5	87.2	86.7	86.7	89.2	89.2	89.0	88.7	88.5	88.5	126.2
1600	94.0	92.0	92.0	92.0	92.0	99.0	93.0	98.7	96.0	96.0	102.2	102.0	100.2	100.7	100.7	100.7	137.7
2000	86.0	86.7	86.7	86.7	86.7	87.7	87.2	87.5	87.2	87.2	89.2	89.5	89.5	89.0	88.0	88.0	126.7
2500	85.5	86.2	86.2	86.2	86.2	87.0	86.2	86.5	86.0	86.0	87.7	89.0	88.7	88.2	87.0	87.0	125.9
3150	88.1	92.1	92.1	92.1	92.1	89.1	88.1	88.1	87.6	87.6	89.8	92.8	93.6	90.1	89.6	89.6	129.2
4000	84.3	84.6	84.6	84.6	84.6	86.6	86.1	85.8	85.6	85.6	86.8	88.3	88.8	88.6	86.8	86.8	125.5
5000	87.9	86.4	86.4	86.4	86.4	91.9	89.7	90.2	87.6	87.6	88.9	91.2	89.2	88.9	86.9	86.9	127.8
6300	87.8	84.5	84.5	84.5	84.5	87.5	86.8	87.5	87.5	87.5	87.5	88.5	89.5	88.0	87.5	87.5	126.3
8000	84.6	84.1	84.1	84.1	84.1	85.9	84.6	84.1	84.6	84.6	85.6	86.9	88.6	86.1	84.9	84.9	124.5
10000	85.6	82.6	82.6	82.6	82.6	84.3	83.6	83.8	83.6	83.6	84.3	87.1	87.6	85.8	84.8	84.8	123.9
12500	81.1	81.6	81.6	81.6	81.6	82.9	82.4	81.4	81.4	81.4	82.6	83.9	84.6	84.4	82.6	82.6	121.9
16000	79.9	81.4	81.4	81.4	81.4	82.4	81.4	80.9	80.7	80.7	82.2	83.7	84.9	83.7	82.2	82.2	121.9
20000	77.9	79.2	79.2	79.2	79.2	79.9	79.2	78.9	78.7	78.7	80.4	81.9	82.7	82.7	80.4	80.4	120.4
25000	76.0	77.0	77.0	77.0	77.0	77.7	77.0	77.2	76.7	76.7	78.0	80.2	80.7	80.5	78.5	78.5	119.0
31500	72.6	72.8	72.8	72.8	72.8	74.1	73.6	73.8	72.8	72.8	75.1	76.8	77.3	76.8	75.6	75.6	116.6
40000	59.1	69.3	69.3	69.3	69.3	70.3	69.8	70.6	69.3	69.3	71.6	73.6	73.6	73.3	71.6	71.6	114.6
DB(A)	99.1	99.0	99.0	99.0	99.0	102.4	99.3	102.0	100.3	100.3	104.6	104.9	103.9	103.8	103.5	103.5	141.1
DB(L)	99.3	99.1	99.1	99.1	99.1	102.2	99.8	101.9	100.8	100.8	104.4	104.7	104.1	103.9	103.7	103.7	141.3
PWL	112.2	113.4	113.4	113.4	113.4	115.4	112.7	115.1	113.9	113.9	117.5	117.9	117.3	117.1	116.8	116.8	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	97.4	103.7	107.2	109.4	113.0	111.4	114.6	113.7	113.9	117.4	117.4	117.4	116.0	114.7	112.9	110.7	
PWL	99.7	106.0	109.5	111.7	116.9	113.4	118.4	116.8	116.9	121.7	121.7	121.6	119.7	118.7	117.1	114.8	

P/N 018 18-INCH Q-FAN 47.1 DEGREE BLADE ANGLE 10330 RPM

DATE 11/27/72 TIME 11-47-55

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2584. N ( 581. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 25.6 C ( 78.0 F) , TEST RELATIVE HUMIDITY = 48.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ.	HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 W
50	68.5	68.5	70.2	71.5	73.5	75.7	76.0	77.2	77.2	77.2	78.2	78.7	79.0	79.2	79.7	80.0	80.2	116.5
63	70.5	70.7	71.2	72.5	73.0	74.2	75.0	75.7	75.7	76.5	77.2	79.0	79.7	82.0	83.2	84.7	84.2	118.3
80	73.0	72.2	73.0	73.5	75.0	75.7	77.5	79.2	79.2	80.5	81.7	84.2	85.0	86.5	86.7	88.0	87.2	122.1
100	78.0	78.2	79.0	79.7	80.2	81.5	82.7	83.7	83.7	85.0	86.2	88.0	89.2	90.0	89.5	89.5	88.5	125.5
125	80.0	80.0	80.7	81.2	82.0	82.7	84.2	85.0	85.0	86.5	87.7	88.2	88.0	88.5	88.5	89.0	88.5	125.1
160	78.5	78.7	81.0	82.0	84.0	85.7	86.5	88.0	88.0	88.2	87.7	88.2	87.5	87.7	91.2	91.0	91.0	126.7
200	80.7	80.0	80.7	82.0	82.2	83.5	84.5	85.5	86.2	86.2	86.2	87.2	88.0	89.0	90.2	91.2	91.5	126.1
250	86.7	86.0	86.0	85.2	84.7	85.0	85.2	87.0	87.0	87.7	88.7	89.2	90.2	91.0	90.7	91.5	93.0	127.6
315	86.0	85.5	85.2	85.2	85.5	86.5	86.5	87.0	87.0	87.0	87.2	88.0	89.5	90.0	90.7	90.5	90.7	127.0
400	84.5	84.5	85.0	86.2	87.2	87.0	86.5	86.5	86.5	86.5	86.5	87.5	88.2	89.2	90.0	90.0	90.2	126.5
500	85.5	85.7	86.5	86.7	87.7	87.2	87.2	87.0	87.0	87.0	87.0	87.7	88.0	87.7	89.0	89.7	90.2	126.4
630	85.5	85.5	86.5	86.5	86.5	86.5	86.5	86.2	86.2	86.7	87.2	88.0	88.5	88.2	88.0	88.7	89.2	126.2
800	83.7	85.0	86.0	87.0	87.5	87.0	87.0	87.2	87.2	87.7	87.7	88.5	89.0	89.7	89.5	89.5	88.5	126.9
1000	84.0	84.2	86.0	86.7	87.2	87.2	88.0	87.5	88.2	88.2	88.7	89.2	89.5	90.0	89.5	89.5	88.2	127.2
1250	85.5	85.5	86.2	87.0	88.0	88.2	88.2	87.7	89.0	89.0	89.0	89.7	90.0	90.2	90.0	89.0	88.5	127.6
1600	87.5	87.5	87.7	87.0	88.0	88.7	89.5	89.5	89.5	89.7	90.0	90.5	90.7	90.7	90.2	89.2	88.0	128.3
2000	94.0	93.5	97.0	94.2	94.5	93.0	94.5	96.5	96.5	92.2	95.5	93.0	93.2	97.2	97.0	98.2	89.5	133.9
2500	85.5	86.2	88.2	88.5	88.5	89.0	89.2	90.0	90.0	89.5	90.2	91.2	91.5	91.2	90.7	90.0	87.2	128.8
3150	85.7	86.5	87.5	87.5	88.2	88.5	88.7	88.7	89.2	89.2	89.5	90.5	92.0	91.5	90.0	89.2	87.0	128.4
4000	88.5	88.5	88.5	88.5	90.0	90.0	90.7	93.5	93.5	89.7	93.7	93.5	92.5	93.5	91.5	89.5	87.7	130.6
5000	85.0	85.5	87.0	87.0	87.7	88.0	88.2	88.5	88.5	88.5	89.5	89.7	90.5	91.2	90.0	88.2	86.0	127.9
6300	86.0	86.0	88.2	87.7	89.2	90.2	90.2	89.0	89.0	90.2	90.7	91.5	92.2	91.2	90.2	89.5	85.5	129.2
8000	84.3	85.3	86.1	86.1	88.1	88.1	87.8	88.6	88.6	89.8	89.8	90.3	90.6	90.8	88.8	86.8	83.3	128.0
10000	83.6	83.8	84.1	84.6	85.3	85.6	86.8	85.6	85.6	86.1	87.3	88.6	89.1	89.3	87.1	85.3	81.8	126.1
12500	81.7	81.9	83.2	82.7	83.7	83.9	84.2	83.7	83.7	84.4	84.9	86.2	86.9	87.7	86.9	84.4	80.4	124.5
16000	80.1	80.9	82.4	82.9	82.9	83.4	83.1	82.6	83.1	83.1	84.6	85.9	87.1	87.6	86.9	84.4	80.1	124.4
20000	77.0	78.2	80.0	80.7	80.7	81.2	81.5	81.0	81.5	81.5	82.2	83.5	85.0	86.0	84.7	82.5	78.7	123.0
25000	74.8	76.0	77.5	78.0	78.8	78.8	79.0	78.8	79.3	80.8	80.8	82.0	82.8	84.0	83.0	81.0	76.5	121.6
31500	70.7	71.7	72.5	73.7	74.7	75.5	75.0	74.7	75.0	75.5	77.0	78.2	79.7	80.7	79.7	77.5	73.5	119.1
40000	66.2	67.5	69.0	69.2	70.2	71.2	70.7	70.7	70.7	71.5	73.0	74.5	75.7	77.0	76.0	73.5	70.0	116.7
DR(A)	99.3	99.3	101.3	100.3	101.0	100.8	101.4	102.3	101.1	102.5	102.5	102.5	102.8	103.8	103.1	103.0	99.7	140.9
DR(L)	99.6	99.6	101.3	100.6	101.3	101.3	101.8	102.6	101.9	103.1	103.1	103.4	103.8	104.7	104.3	104.2	102.5	141.8
PWL	113.3	113.1	115.2	114.1	114.7	114.3	115.1	116.2	114.7	116.7	116.7	116.9	116.9	117.8	117.4	117.6	113.8	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL 97.3 105.7 107.9 110.8 112.0 113.9 115.7 114.6 116.7 116.8 115.3 116.6 115.1 113.7 107.6

PNLT 99.5 108.7 110.1 112.9 113.3 115.6 117.9 114.6 118.5 117.9 116.3 118.7 117.2 116.6 107.6

R/P N 019 18-INCH O-FAN 62.5 DEGREE BLADE ANGLE 8600 RPM DATE 11/27/72 TIME 11-47-59

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2322. N ( 522. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 18.9 C ( 66.0 F ) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE ( 25C ) AND RELATIVE HUMIDITY ( 70PCT ) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M										PHL RE 10*-13 W						
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	67.7	68.7	69.5	75.0	73.0	74.5	75.7	76.2	77.2	77.5	77.5	78.0	79.0	79.0	79.7	80.5	116.0
63	69.5	70.5	70.7	74.7	72.0	73.5	74.5	74.2	75.2	76.5	77.7	79.5	81.0	82.5	83.7	83.5	117.4
80	72.5	73.0	73.2	76.7	74.2	75.5	77.2	78.7	79.7	81.2	82.7	84.5	85.7	86.7	86.7	86.0	121.4
100	79.2	79.0	80.0	80.5	80.7	81.7	83.5	84.0	84.7	86.5	87.2	88.5	89.2	89.5	89.2	87.7	125.1
125	81.7	81.2	82.0	82.5	83.5	84.5	85.0	86.2	86.5	86.7	87.2	87.7	88.7	88.0	89.0	88.5	125.4
160	81.7	82.2	82.5	82.5	82.7	84.0	84.5	85.0	86.0	86.2	86.5	87.7	88.5	89.0	90.5	91.2	125.6
200	84.5	84.5	85.2	85.0	85.0	85.2	86.0	86.7	87.7	89.0	89.5	90.2	91.2	92.0	94.0	94.2	128.3
250	89.7	88.5	88.7	88.5	87.0	86.7	88.0	89.2	90.0	91.2	92.2	92.5	92.5	91.7	93.2	94.5	129.7
315	89.2	89.0	88.5	87.7	87.7	88.5	89.0	89.5	89.7	90.7	90.5	90.0	90.2	91.2	91.7	93.0	128.7
400	87.0	86.5	86.7	87.0	87.2	87.5	88.0	88.0	87.7	88.5	89.2	89.2	89.5	91.0	91.2	92.0	127.6
500	86.2	86.5	87.2	88.0	87.5	88.0	88.0	88.5	88.5	89.2	89.5	90.0	89.0	90.0	90.2	90.7	127.7
630	87.0	87.2	87.2	88.5	88.5	88.7	88.5	88.2	88.7	89.7	90.5	90.2	90.5	90.5	90.5	90.2	128.2
800	87.0	88.0	88.2	89.5	89.2	89.2	88.2	89.0	90.0	90.0	90.7	91.5	91.5	91.2	90.7	89.0	128.9
1000	87.0	87.2	88.5	89.0	89.2	88.2	88.5	89.2	89.7	90.7	91.5	91.5	91.7	91.2	90.7	88.0	128.9
1250	86.5	86.7	88.0	88.5	89.5	88.7	89.7	89.7	90.2	90.7	91.7	92.0	92.0	91.5	90.2	88.7	129.1
1600	93.0	93.0	90.5	91.7	94.0	91.2	94.0	96.2	92.7	97.2	98.7	98.5	96.5	96.7	93.2	88.7	134.4
2000	91.0	91.0	90.0	90.5	91.5	90.2	91.7	93.2	91.2	94.0	95.5	95.0	94.5	94.0	91.0	87.5	131.7
2500	87.0	87.7	89.2	90.0	89.5	89.5	89.7	89.5	90.2	90.5	91.7	92.2	92.2	91.5	89.0	85.7	129.2
3150	89.7	90.5	91.2	90.7	92.5	90.7	91.7	91.5	90.5	91.5	92.2	95.0	96.5	93.2	89.5	87.5	131.3
4000	88.0	88.2	88.7	89.0	89.7	89.2	89.7	89.5	89.7	90.2	90.7	92.5	93.5	92.2	88.2	86.0	129.4
5000	87.5	87.5	88.5	89.7	90.2	90.0	91.5	91.0	91.2	91.0	91.5	92.2	93.5	92.2	88.5	84.5	130.0
6300	86.6	87.6	88.3	88.6	88.3	88.8	89.3	89.6	90.1	90.3	90.3	91.3	92.1	90.6	88.3	83.8	128.7
8000	86.4	87.2	88.2	88.7	88.7	88.4	88.7	88.4	88.4	89.4	89.7	90.9	90.7	89.7	86.9	82.4	128.0
10000	85.3	86.0	86.0	87.3	87.5	86.8	87.0	87.0	87.3	87.5	88.3	89.8	89.8	88.8	85.8	81.0	126.8
12500	84.1	84.9	85.6	86.1	85.6	85.6	85.9	85.4	85.4	85.4	86.9	88.1	89.4	88.1	84.4	79.9	125.8
16000	83.8	84.3	85.3	86.1	85.3	85.1	85.6	85.1	85.1	85.6	86.6	87.8	88.6	87.6	83.8	79.3	125.7
20000	81.9	83.4	83.9	84.4	83.9	83.9	83.9	83.4	83.6	83.6	84.4	85.4	86.6	85.9	82.1	77.6	124.3
25000	80.4	81.4	82.4	82.4	82.2	82.2	81.9	81.2	81.4	81.7	82.9	84.2	84.9	84.4	80.7	76.2	123.3
31500	78.3	79.1	78.8	79.6	79.1	78.6	78.1	78.1	78.3	78.6	79.8	81.1	81.8	81.3	78.1	73.1	121.2
40000	75.7	75.9	75.9	76.2	75.4	74.7	75.2	75.2	74.9	75.2	76.9	77.7	78.4	77.7	74.4	70.2	119.4
DR(A)	100.5	100.7	100.8	101.3	102.1	101.2	102.2	102.9	102.0	103.7	104.7	105.2	105.2	104.3	101.9	99.8	142.0
DR(L)	101.3	101.5	101.6	102.1	102.6	102.0	102.8	103.4	103.0	104.3	105.2	105.7	105.9	105.3	104.0	103.2	142.9
PNL	113.9	114.3	114.8	115.0	115.9	115.0	115.8	116.0	115.6	116.8	117.8	118.8	119.5	117.9	115.6	113.7	
FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS																	
PNL	98.4	105.2	108.8	112.0	112.6	114.5	115.5	115.4	116.8	117.7	118.2	118.2	118.2	115.6	111.7	107.5	
PNLT	99.8	105.2	108.8	113.1	112.6	115.7	117.0	115.4	118.5	119.4	119.4	119.9	119.5	116.9	111.7	107.5	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PNL 98.4 105.2 108.8 112.0 112.6 114.5 115.5 115.4 116.8 117.7 118.2 118.2 118.2 115.6 111.7 107.5

PNLT 99.8 105.2 108.8 113.1 112.6 115.7 117.0 115.4 118.5 119.4 119.9 119.5 116.9 111.7 107.5

PWIN 000 18-INCH Q-FAN 62.5 DEGREE BLADE ANGLE 8960 RPM

DATE 11/27/72 TIME 11-48-02

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2633. N ( 592. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 18.9 C ( 66.0 F) , TEST RELATIVE HUMIDITY = 52.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF										7.62 M				PWL RE			
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	10**	13 M
50	58.2	69.0	60.7	72.0	72.5	74.5	75.7	76.7	77.2	78.0	78.5	79.0	79.2	80.2	80.2	80.7	116.4	116.4
63	70.5	70.7	70.5	71.0	72.0	73.0	74.0	75.2	75.5	77.2	78.5	80.2	81.2	83.5	84.2	84.5	118.0	118.0
80	73.5	73.2	73.0	74.0	75.2	75.7	77.0	79.0	80.7	81.7	83.0	85.2	86.2	87.7	87.5	87.0	122.0	122.0
100	79.5	79.2	79.5	80.2	81.0	82.5	83.7	84.5	85.7	86.5	89.2	89.5	90.2	90.5	89.5	88.7	126.0	126.0
125	81.5	81.2	81.7	82.5	83.2	84.2	85.2	86.0	86.7	87.2	88.0	89.0	89.0	89.2	89.2	88.7	125.8	125.8
160	82.0	82.0	82.7	83.0	83.2	84.5	85.0	85.2	86.2	86.7	87.7	87.7	88.7	89.7	90.5	91.5	126.0	126.0
200	84.5	84.5	85.0	85.7	85.5	85.7	86.5	87.2	88.7	89.2	90.2	91.0	91.7	93.5	94.7	95.0	129.0	129.0
250	90.0	89.7	89.2	88.5	88.0	88.0	88.7	90.0	91.0	92.0	93.2	94.0	94.0	94.0	95.5	97.5	131.2	131.2
315	89.5	89.7	89.0	90.0	90.0	89.0	90.0	90.5	91.5	91.5	91.5	92.0	92.5	93.5	93.7	94.5	130.3	130.3
400	87.7	87.5	88.0	88.5	88.7	88.7	89.2	89.7	89.2	89.7	90.2	90.7	91.0	92.0	92.7	92.7	128.9	128.9
500	88.0	88.2	88.7	89.0	89.2	89.5	89.0	89.0	89.5	90.0	90.2	89.7	89.2	91.2	92.2	92.0	128.6	128.6
630	89.5	89.2	89.0	90.0	89.5	89.5	89.5	89.2	89.7	90.5	91.0	91.5	91.5	91.5	91.2	91.2	129.1	129.1
800	88.5	89.2	90.0	90.2	90.0	90.2	90.5	90.5	90.7	91.0	91.5	92.0	92.5	92.7	91.5	90.7	129.8	129.8
1000	89.0	88.5	89.5	90.5	90.2	90.5	90.0	90.2	91.0	91.7	92.7	92.7	93.5	92.7	91.7	90.2	130.2	130.2
1250	98.0	87.7	88.5	90.0	89.5	90.0	90.5	90.2	91.0	92.0	92.7	93.2	93.2	92.7	91.0	90.0	130.1	130.1
1600	91.0	90.7	92.5	94.7	94.0	92.0	90.7	92.5	92.5	93.7	95.5	98.5	97.2	95.2	91.5	90.7	133.2	133.2
2000	92.2	92.0	95.5	98.5	97.5	93.2	91.5	94.5	94.2	96.2	98.2	101.5	100.5	98.7	93.2	93.0	136.0	136.0
2500	97.7	98.2	99.5	90.0	90.5	90.2	90.5	90.7	91.0	91.7	92.7	94.0	93.7	93.2	90.5	87.7	130.4	130.4
3150	99.7	99.5	91.5	90.5	89.7	91.0	91.7	93.0	92.0	91.5	94.0	95.0	94.5	94.2	91.0	87.5	131.4	131.4
4000	99.5	90.0	93.0	91.0	89.2	92.2	93.0	94.0	92.5	91.5	94.0	94.0	94.2	95.2	92.2	87.2	131.8	131.8
5000	87.0	88.0	89.7	90.5	90.5	89.2	89.5	89.7	90.2	90.2	90.2	93.5	94.0	93.5	90.2	86.2	130.1	130.1
6300	87.6	88.3	88.6	89.1	89.3	89.3	90.1	90.3	90.8	91.3	91.8	93.1	93.1	92.6	89.3	85.8	129.9	129.9
8000	87.2	88.2	88.7	88.4	89.4	88.9	89.9	89.2	90.4	90.7	91.4	92.7	92.2	91.2	88.7	85.4	129.4	129.4
10000	87.3	86.5	87.3	87.3	87.8	87.3	87.5	87.5	88.0	88.8	90.3	91.3	92.0	91.0	87.8	83.8	128.2	128.2
12500	84.6	85.4	85.9	86.4	86.6	86.6	86.9	85.9	86.6	87.9	88.9	90.9	90.6	89.6	86.6	81.9	127.3	127.3
16000	83.8	85.2	85.3	86.8	86.6	86.3	85.8	85.8	86.1	87.3	88.6	89.8	90.1	89.6	86.1	82.1	127.2	127.2
20000	82.1	83.4	84.1	84.6	84.4	83.9	83.9	83.9	84.1	85.4	86.9	88.6	89.1	88.6	85.4	80.9	126.1	126.1
25000	80.2	80.9	81.9	82.7	82.9	81.9	82.4	82.2	82.7	83.4	85.4	86.7	87.7	87.4	83.9	79.2	125.2	125.2
31500	76.6	77.8	79.3	79.3	79.3	78.1	78.6	78.6	79.3	80.3	82.6	84.6	85.3	84.3	81.6	77.8	123.4	123.4
40000	73.7	74.4	75.9	75.7	75.7	75.2	75.2	74.9	75.7	76.9	79.7	81.4	82.4	81.7	78.7	74.7	121.8	121.8
DB(A)	100.9	101.0	102.8	104.0	103.5	102.4	102.4	103.3	103.2	103.9	105.4	107.3	106.8	106.0	103.1	101.7	143.3	143.3
DB(L)	101.8	101.9	103.2	104.2	103.8	103.1	103.2	103.9	104.1	104.8	106.1	107.6	107.4	107.0	105.3	104.8	144.1	144.1
PWL	114.3	114.5	116.4	117.7	117.1	116.1	116.6	117.4	117.0	117.5	119.1	121.0	120.6	119.9	117.4	115.6		

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	98.5	106.7	111.5	113.2	113.8	115.3	116.8	116.8	117.5	118.9	120.5	119.4	117.5	113.4	109.5			
PWL	98.5	108.3	113.6	115.0	113.8	115.3	116.8	116.8	118.7	120.3	122.2	121.0	119.0	113.4	110.7			



RUN 021 18-INCH C-FAN 57.4 DEGREE BLADE ANGLE 7910 RPM DATE 11/27/72 TIME 11-48-05

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1904. N ( 428. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 17.8 C ( 64.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FRFQ. HZ	3	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 W
50	67.2	68.5	70.5	71.0	73.0	73.0	74.5	75.5	76.0	76.5	76.5	77.5	77.2	77.5	78.0	78.7	114.7
63	69.5	69.2	69.5	70.2	71.2	72.0	72.7	73.5	73.7	75.7	76.5	78.0	79.7	81.0	81.5	82.2	115.9
80	71.2	70.7	70.5	72.0	73.0	74.0	75.7	76.5	78.2	80.2	81.7	83.2	84.2	85.5	85.2	85.5	120.1
100	76.5	76.2	76.5	78.5	79.2	80.0	81.2	82.0	82.5	84.2	84.5	85.7	86.7	87.0	87.0	86.5	122.8
125	77.7	78.2	78.5	79.7	81.2	82.7	82.7	84.0	84.7	85.0	85.5	85.2	85.5	85.5	85.7	85.0	122.9
160	77.5	77.7	78.2	79.0	80.0	80.2	80.7	81.5	82.5	82.7	83.0	83.7	83.7	84.7	86.0	87.2	121.6
200	81.5	82.0	82.5	82.2	82.2	82.5	82.0	83.5	84.5	85.0	85.5	86.5	86.7	87.5	89.0	88.7	124.1
250	86.2	85.5	86.0	85.5	84.7	84.5	85.0	84.7	85.5	86.0	88.0	88.0	87.5	87.5	88.5	89.7	125.4
315	83.0	83.0	83.0	83.2	84.2	84.7	84.7	84.2	84.7	85.2	85.0	86.5	86.7	87.5	87.5	88.0	124.2
400	82.5	82.0	82.2	83.2	83.7	84.5	83.7	83.5	83.5	84.0	84.5	84.5	84.7	86.2	86.5	86.7	123.1
500	82.7	83.0	83.5	84.7	84.5	84.0	84.0	83.5	84.5	84.5	85.0	85.0	85.0	85.7	85.7	85.7	123.3
630	84.5	84.5	84.5	84.7	84.0	84.0	84.2	84.5	84.2	85.0	85.2	85.5	85.7	86.0	86.2	86.0	123.7
800	85.5	84.7	84.7	84.7	84.5	85.0	84.2	85.5	86.2	87.0	87.7	86.7	86.7	87.5	86.5	85.5	124.3
1000	84.2	83.7	84.5	85.5	86.5	85.5	85.2	85.5	86.2	87.0	87.7	87.5	88.2	88.0	87.0	85.5	125.3
1250	84.0	83.5	85.0	85.7	86.5	86.7	87.0	86.7	87.5	87.7	89.2	89.5	88.7	89.2	88.2	86.0	126.5
1600	92.0	88.5	89.5	91.0	88.0	96.2	97.5	96.0	98.7	100.0	103.5	104.0	99.0	101.5	99.5	94.2	138.3
2000	88.0	87.0	87.5	87.2	87.5	87.5	88.0	87.5	88.0	88.7	90.7	91.0	90.2	90.0	88.0	86.5	127.6
2500	85.5	85.7	86.7	87.0	86.2	87.0	87.0	86.2	86.2	87.5	88.5	89.5	89.5	88.5	87.0	84.7	126.3
3150	87.0	87.2	89.5	92.7	90.0	87.7	88.7	86.2	86.5	87.5	88.5	90.2	90.5	88.7	89.0	85.0	127.6
4000	83.5	84.0	85.2	85.7	85.7	84.7	85.2	84.2	84.5	85.5	86.5	88.2	89.0	88.0	85.5	84.0	125.0
5000	84.0	86.0	86.0	85.7	85.7	85.7	86.0	87.2	86.0	86.7	87.0	89.5	89.2	87.5	86.0	83.7	125.8
6300	85.0	83.5	85.7	86.7	86.2	86.0	86.2	86.7	86.5	87.0	87.2	87.5	88.0	87.2	86.2	82.7	125.6
8000	83.8	83.1	85.1	87.1	87.1	86.1	85.1	84.6	84.8	85.6	86.1	87.1	86.6	86.3	84.6	81.1	124.7
10000	82.8	81.6	83.3	83.1	83.8	83.3	83.6	82.3	82.6	83.3	84.3	85.3	86.1	86.1	83.3	80.1	123.1
12500	90.7	81.9	81.9	81.9	82.2	81.9	81.9	80.7	80.7	81.9	82.9	84.7	84.2	84.4	82.2	78.7	121.8
16000	79.8	79.8	81.5	81.8	81.5	82.0	81.3	81.0	80.0	81.5	82.5	84.0	85.3	83.8	81.8	78.0	121.9
20000	77.7	77.5	79.0	79.0	80.0	79.5	79.5	79.0	78.5	79.0	80.5	81.7	83.7	82.5	80.2	76.5	120.4
25000	74.9	75.4	76.4	77.2	77.2	77.4	77.2	75.9	76.2	76.9	78.4	79.7	80.7	80.4	78.4	73.9	118.7
31500	71.9	71.4	72.6	73.9	73.6	73.6	73.4	72.9	72.9	73.4	74.9	76.6	77.9	77.1	74.9	70.9	116.5
40000	57.9	67.2	58.9	69.7	69.7	69.4	69.7	68.7	68.4	69.4	71.4	73.2	73.9	73.4	71.4	67.7	114.2
DB(A)	98.1	97.2	98.2	99.5	98.4	100.3	101.1	100.1	101.7	102.8	105.6	106.2	103.0	104.2	102.6	98.9	141.4
DB(L)	98.5	97.8	98.7	99.7	99.0	100.5	101.1	100.3	101.7	102.7	105.2	105.8	103.2	104.2	103.0	100.5	141.4
PWL	111.1	110.6	112.3	114.1	112.8	113.5	114.2	113.4	114.8	115.8	118.1	118.7	116.3	117.4	116.0	112.8	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL	94.9	102.7	107.9	108.9	111.2	113.0	112.9	114.7	115.8	117.9	118.2	115.1	115.0	112.1	106.6		
PWL	96.0	103.9	110.1	110.2	114.2	116.3	115.8	118.3	119.8	122.4	122.8	118.2	119.0	115.9	109.3		

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2842. N ( 639. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 17.8 C ( 64.0 F ) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10** -13 W
50	68.5	69.0	70.7	72.7	74.2	74.5	76.7	77.5	78.5	79.7	80.0	79.7	80.2	80.2	81.5	81.2	117.4
63	70.2	70.0	72.7	71.5	72.5	74.0	74.5	75.5	76.7	78.0	79.0	80.5	82.7	84.0	85.2	85.0	118.7
83	72.7	73.0	72.7	74.0	75.0	76.2	77.7	79.7	81.0	82.5	84.0	85.5	86.7	87.7	88.0	87.7	122.5
100	79.0	79.2	79.5	80.7	81.5	82.7	83.5	85.0	86.2	87.7	89.0	89.7	91.0	91.0	91.0	90.0	126.6
125	81.2	81.2	80.7	82.5	83.2	84.5	85.5	86.0	87.0	88.0	88.5	89.0	89.5	90.2	89.7	89.5	126.3
160	83.2	83.2	80.7	82.0	82.2	82.7	84.7	86.2	87.7	88.5	88.2	88.2	88.7	91.0	91.0	91.0	126.3
200	82.0	82.0	82.5	83.5	84.2	84.7	86.0	86.7	88.0	89.2	90.5	91.0	92.0	93.0	93.5	94.5	128.6
250	88.0	88.0	88.0	87.5	87.2	87.7	88.7	89.7	90.7	92.0	93.2	94.0	94.0	94.0	95.0	96.5	130.9
315	88.0	88.0	88.0	88.0	88.0	89.0	89.0	89.5	90.0	90.7	92.7	93.0	92.7	93.7	94.2	95.2	130.2
400	87.5	87.7	89.0	90.0	89.7	89.5	89.2	88.5	88.5	89.5	90.2	91.0	92.5	93.0	93.0	93.2	129.3
500	89.2	89.0	89.7	90.2	90.5	90.2	89.5	89.2	89.7	90.0	90.2	90.5	90.5	92.5	92.5	92.5	129.3
630	89.0	88.7	90.0	90.5	90.5	90.0	89.5	90.7	90.7	91.2	91.5	93.0	94.0	93.7	93.2	91.7	129.4
800	87.2	88.0	89.7	91.0	90.5	90.2	90.5	90.7	91.0	92.0	92.7	94.2	94.5	94.2	93.5	91.5	130.4
1000	87.7	87.7	89.0	90.0	90.2	90.5	91.0	91.2	92.0	93.0	93.0	93.7	94.2	93.7	92.5	90.7	130.9
1250	87.2	87.7	89.0	90.0	90.2	90.5	91.0	91.2	92.0	93.0	94.0	95.0	95.0	93.7	93.0	91.0	131.7
1600	90.0	90.2	90.7	91.0	91.0	91.7	92.0	92.0	92.2	94.0	94.2	95.0	95.0	93.7	93.0	91.0	140.4
2000	92.0	92.0	96.0	97.2	95.2	97.7	98.2	96.7	97.7	103.7	105.5	104.7	104.5	102.5	101.5	97.2	131.5
2500	88.0	88.5	90.5	91.0	90.2	91.0	91.0	91.7	92.0	93.2	94.7	95.2	94.0	94.5	92.5	89.5	131.5
3150	89.2	88.7	89.5	90.2	90.0	90.5	91.0	91.0	91.7	92.2	94.2	95.5	95.0	93.7	91.5	89.5	131.3
4000	91.5	89.7	90.5	92.0	93.0	91.7	93.2	91.2	92.0	94.5	96.2	95.0	99.2	94.7	93.5	89.7	133.1
5000	87.2	88.5	89.0	89.5	89.0	89.2	89.7	90.2	91.2	91.2	92.5	93.7	94.0	93.2	90.5	87.2	130.2
6300	88.5	89.5	89.7	90.7	90.2	90.2	91.2	91.5	92.0	92.5	94.0	95.0	95.2	93.5	91.2	87.7	131.4
8000	87.8	87.8	89.3	89.8	89.6	89.8	89.8	90.8	91.6	93.3	93.8	93.1	93.1	92.1	89.3	85.8	130.5
10000	86.6	88.3	87.8	88.1	88.1	88.1	88.1	88.1	89.3	89.8	91.1	92.1	92.6	91.3	88.8	85.3	129.0
12500	85.4	84.9	86.2	86.4	86.7	86.7	86.9	86.9	87.2	89.2	89.7	91.2	91.4	89.2	86.7	83.7	127.8
16000	83.8	84.0	85.0	85.3	85.8	86.0	85.8	86.5	86.8	87.5	89.0	89.8	90.0	88.5	86.0	83.0	127.1
20000	81.2	82.0	83.0	83.5	84.0	84.0	84.0	84.0	85.5	86.0	87.2	88.2	88.7	87.5	85.2	81.0	126.0
25000	79.4	79.7	81.2	81.4	82.2	81.7	82.2	82.4	82.9	84.4	85.9	86.4	87.2	86.4	83.7	79.4	125.0
31500	75.9	76.6	77.6	76.9	78.1	77.9	78.6	78.9	79.9	80.9	82.6	83.4	84.4	82.9	80.6	76.4	122.7
40000	71.9	72.2	73.4	73.7	74.2	73.9	74.4	74.4	75.9	76.9	78.7	79.9	80.2	79.2	76.4	73.4	120.4
OR(A)	101.1	100.9	102.5	103.5	102.8	103.6	104.0	103.6	104.2	107.4	108.9	108.7	109.0	107.4	106.2	103.4	145.1
OR(L)	101.7	101.6	102.9	103.8	103.3	103.9	104.3	104.1	104.8	107.4	108.7	108.8	109.1	107.9	107.1	105.6	145.4
PNL	114.9	114.3	116.2	117.1	116.5	117.4	117.8	117.3	118.1	121.4	122.9	122.8	123.0	121.6	120.6	117.8	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PNL	98.3	106.6	110.9	112.6	115.0	116.6	116.8	118.0	121.4	122.7	122.2	121.7	119.3	116.7	111.7	
PNLT	98.8	108.4	113.0	114.1	117.1	118.8	118.4	119.8	124.8	126.4	125.4	125.0	122.1	119.6	114.0	

RUN 023 18-INCH O-FAN 43 DEGREE BLADE ANGLE 8372 RPM DATE 11/27/72 TIME 11-48-12

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1495. N ( 336. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 17.2 C ( 63.0 F) , TEST RELATIVE HUMIDITY = 62.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**--13 M
50	52.5	63.5	66.0	67.2	69.0	70.0	71.0	71.7	72.2	72.7	73.2	73.2	73.0	73.2	74.5	75.0	110.9
63	64.7	65.7	66.7	67.5	67.2	68.7	69.7	70.0	70.7	73.2	74.0	76.2	77.2	77.7	79.2	79.0	113.2
80	68.0	68.2	68.0	68.0	69.0	70.2	71.7	73.0	74.7	76.5	77.2	79.2	80.5	82.0	82.2	82.2	116.5
102	72.7	72.7	73.0	74.0	74.5	75.2	76.5	77.2	79.0	80.0	81.0	81.7	82.5	82.7	82.7	82.0	118.6
125	75.0	75.0	75.7	76.7	76.7	77.5	78.7	79.2	80.0	80.7	81.0	81.5	82.0	82.5	82.7	82.2	119.1
163	73.5	73.2	74.7	75.7	75.7	77.0	77.0	78.5	79.2	80.0	80.7	81.0	81.0	81.7	82.0	82.7	118.2
200	77.7	77.5	78.7	79.2	79.2	79.2	79.2	79.7	80.0	81.0	81.0	81.7	82.0	83.0	83.2	83.2	119.7
250	81.5	82.0	82.5	81.7	81.5	81.0	80.5	80.7	80.5	81.2	83.2	83.7	83.2	82.5	83.0	83.5	120.8
315	79.7	79.5	80.2	80.2	81.2	81.5	81.5	81.2	80.5	80.0	80.2	80.5	81.0	82.2	82.7	83.5	119.8
400	79.5	79.5	80.0	81.2	81.7	81.7	80.5	80.2	79.7	79.7	79.7	79.5	80.0	80.2	81.0	81.7	119.1
500	79.5	79.2	80.7	82.2	81.0	81.2	81.2	80.0	80.0	80.0	80.2	79.7	79.5	80.5	81.0	81.2	119.1
630	80.0	80.7	81.5	82.0	81.0	80.5	81.2	80.5	81.0	81.0	81.0	81.7	82.2	81.7	81.2	81.0	119.9
800	81.7	82.0	83.0	82.0	80.7	80.7	80.5	80.5	80.7	81.2	81.5	82.5	82.7	82.7	82.2	81.5	120.3
1000	83.0	82.0	82.5	81.7	81.5	81.2	80.7	81.0	81.2	81.5	82.0	82.5	82.0	83.0	82.2	81.2	120.4
1250	78.5	79.0	81.0	82.5	82.5	81.7	82.2	82.5	82.0	82.5	82.7	83.5	82.5	83.5	83.0	81.0	121.1
1600	84.5	86.2	88.0	88.0	86.7	88.2	90.2	90.0	87.0	85.5	85.5	84.7	83.7	84.0	84.2	83.0	125.6
2000	82.5	83.0	84.5	84.0	83.2	84.0	84.7	84.2	83.2	83.0	83.5	84.0	84.0	84.0	82.5	82.0	122.4
2500	81.0	81.5	82.5	82.2	81.5	82.5	82.0	81.5	81.5	82.0	82.0	83.0	83.0	83.5	82.0	80.7	120.9
3150	84.0	82.0	84.7	86.5	84.7	84.2	84.7	85.2	83.5	83.2	84.0	86.5	85.7	84.2	83.2	82.0	123.4
4000	79.7	80.5	82.0	82.2	82.0	81.5	81.2	81.0	80.2	80.5	82.0	82.2	83.7	83.2	81.5	81.0	120.6
5000	81.0	81.7	83.2	83.5	85.2	83.0	83.5	82.7	82.7	83.7	84.5	85.0	85.0	83.0	81.5	80.2	122.5
6000	80.5	81.2	83.2	83.0	83.0	82.7	82.0	82.2	82.2	83.0	83.5	84.0	84.7	83.0	81.0	79.5	121.8
8000	79.6	79.6	81.6	83.1	80.6	81.1	81.8	81.8	80.1	79.8	81.6	82.3	82.1	81.3	79.8	78.3	120.2
10000	79.7	80.4	80.7	81.2	79.2	80.2	79.9	79.4	78.7	78.9	80.2	82.4	80.7	82.2	79.4	76.7	119.3
12500	76.5	77.8	79.8	80.0	78.8	79.3	78.3	77.8	77.0	77.3	79.5	81.3	80.0	80.5	78.8	74.8	118.4
16000	76.2	76.7	78.0	79.5	77.7	78.5	77.5	77.0	76.0	76.7	78.5	79.0	79.2	80.2	78.5	74.5	117.7
20000	72.9	73.9	76.2	77.2	75.2	76.2	75.7	74.7	74.4	74.9	76.9	77.7	78.2	78.7	77.2	72.7	116.5
25000	70.9	71.1	73.4	73.9	72.9	73.1	73.1	72.4	71.9	72.6	73.6	75.4	75.9	76.1	74.9	70.9	114.6
31500	67.2	67.2	69.7	69.9	69.4	69.7	69.2	68.2	68.4	68.9	70.4	71.7	73.2	72.9	71.2	67.7	112.2
40000	62.7	62.9	64.9	65.7	64.9	65.4	65.2	64.4	64.4	65.2	66.7	68.2	69.2	69.7	67.2	63.7	109.8
DR(A)	93.4	93.7	95.3	95.6	94.9	95.0	95.7	95.5	94.3	94.2	94.7	95.4	95.2	94.9	94.0	93.0	133.7
DR(L)	94.1	94.4	95.8	96.1	95.5	95.6	96.1	96.0	95.1	95.2	95.9	96.6	96.5	96.6	96.0	95.3	134.7
PNL	107.3	106.8	108.6	109.5	108.5	108.4	108.9	108.9	107.9	107.9	108.6	109.9	109.7	109.1	108.2	107.3	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PNL	90.8	99.0	103.3	104.6	106.0	107.6	108.3	107.8	107.9	108.5	109.4	108.4	108.4	106.7	104.3	101.1	
PNLT	92.6	100.7	104.9	105.9	107.8	109.9	110.5	109.2	107.9	108.5	110.7	108.4	108.4	106.7	104.3	101.1	

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2277. N ( 512. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 17.2 C ( 63.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M										PWL RE 10**-13 W						
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	65.2	66.0	68.5	69.7	71.7	72.7	74.7	76.0	76.5	76.7	77.0	77.5	78.0	78.2	79.2	79.5	115.1
63	68.0	68.0	69.0	69.7	71.0	72.2	73.0	74.2	75.0	76.2	77.5	79.0	80.7	81.5	83.0	82.7	116.7
80	69.7	69.5	71.0	71.5	72.7	73.5	75.5	77.0	79.0	80.5	82.2	83.5	85.5	86.2	86.0	85.7	120.7
100	74.5	74.7	77.2	78.0	78.7	79.5	80.5	82.0	83.0	84.7	86.0	87.0	88.0	88.5	88.5	87.2	123.8
125	76.5	76.7	79.0	79.7	80.5	81.7	82.7	82.7	84.2	84.5	85.7	86.0	86.2	86.7	86.5	86.2	123.2
160	75.7	77.5	81.5	83.2	84.0	86.0	87.7	89.0	88.5	87.2	87.2	86.2	91.5	91.7	87.0	92.5	127.0
200	78.5	79.2	80.5	81.7	82.0	82.7	83.5	84.2	84.5	85.0	85.5	86.2	87.5	88.0	88.7	89.2	124.3
250	84.5	84.2	84.2	83.7	83.7	83.2	83.7	84.7	85.0	86.5	87.2	88.0	88.0	87.2	88.2	89.7	125.0
315	82.0	82.2	83.0	83.7	84.7	84.7	84.2	84.7	85.0	85.5	86.0	87.2	88.5	89.2	89.2	89.5	125.2
400	81.7	81.7	83.5	84.7	85.2	85.0	85.0	84.7	85.0	85.2	85.2	85.5	87.2	87.7	88.7	89.5	124.6
500	83.5	84.0	85.0	85.5	85.0	85.0	85.0	85.0	85.2	85.2	85.0	85.5	85.7	86.2	87.7	88.2	124.3
630	84.5	84.2	85.0	85.5	85.0	84.5	84.5	85.0	85.5	86.2	86.5	87.0	86.7	86.2	87.2	88.2	124.7
800	83.5	83.2	84.7	84.7	84.7	85.2	85.0	85.0	85.2	86.2	87.2	87.5	88.5	88.0	87.7	87.5	125.1
1000	81.7	82.0	84.2	85.0	85.7	85.5	85.0	85.5	85.7	87.2	87.7	88.5	89.5	89.2	89.5	87.5	125.9
1250	84.0	83.7	86.0	86.5	86.0	85.7	86.0	86.2	87.0	87.2	88.0	88.7	89.0	89.0	88.7	87.0	126.1
1600	84.5	85.0	85.7	86.0	86.7	87.0	87.0	87.5	87.2	87.5	88.5	89.5	89.7	88.7	88.5	87.2	126.6
2000	89.5	89.5	91.5	89.5	88.5	90.2	93.2	91.5	93.0	90.5	90.0	92.7	94.2	96.2	98.5	89.5	131.7
2500	83.2	83.7	85.7	86.5	86.2	86.7	86.5	86.7	87.2	87.7	88.5	89.7	89.5	89.5	89.5	86.5	126.6
3150	84.2	84.0	85.5	85.7	86.2	86.0	87.0	86.0	86.2	87.0	88.0	90.0	90.0	88.5	87.7	86.7	126.3
4000	87.7	85.5	88.5	88.7	88.5	87.7	88.0	89.2	86.7	87.2	88.0	91.5	93.0	93.2	90.5	88.2	128.5
5000	83.0	84.0	86.5	87.5	87.0	86.0	86.0	86.0	86.0	86.5	87.5	89.0	89.5	88.5	87.0	85.2	126.1
6300	83.5	85.5	88.0	87.7	87.2	88.0	88.2	88.2	88.7	88.7	89.5	90.0	91.5	88.7	88.2	85.2	127.7
8000	83.6	84.3	86.3	87.1	86.6	88.1	87.6	86.3	87.3	87.3	88.6	88.6	89.1	87.6	86.3	83.6	126.5
10000	82.1	82.8	83.6	84.6	85.1	85.3	85.1	84.8	84.3	86.1	86.6	87.3	88.8	86.1	85.1	82.1	125.0
12500	81.4	80.2	82.9	83.2	83.7	83.7	83.2	82.7	82.7	83.9	84.4	85.7	86.7	86.2	83.9	88.7	123.5
15000	78.8	79.5	81.5	82.5	82.8	83.5	83.3	82.3	81.8	83.5	84.0	86.3	86.8	86.0	83.3	79.8	123.6
20000	77.2	78.2	79.5	81.0	81.0	81.0	80.5	80.0	80.2	81.5	82.5	84.2	85.5	83.7	82.5	78.5	122.2
25000	74.4	75.2	77.2	78.2	78.4	78.2	78.2	77.7	77.4	79.4	80.4	82.4	83.2	82.2	79.7	76.7	120.7
31500	71.1	71.9	73.4	74.1	74.6	74.4	74.6	74.6	74.6	76.1	77.6	79.4	80.6	79.4	76.6	73.6	118.7
40000	66.8	67.5	69.5	70.3	70.3	70.8	70.5	70.5	70.8	72.5	74.0	75.5	76.5	76.0	73.5	70.3	116.4
DB(A)	96.7	96.7	98.7	98.6	98.4	98.7	99.5	99.1	99.5	99.3	99.9	101.4	102.2	102.3	102.8	99.0	139.0
DB(L)	97.2	97.3	99.1	99.3	99.2	99.6	100.2	100.1	100.3	100.5	101.1	102.3	103.4	103.3	103.4	101.5	140.1

PWL 110.6 110.3 112.2 112.5 112.4 112.3 113.5 113.1 113.5 112.9 113.5 115.5 116.6 116.4 117.1 113.4

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL 94.4 102.6 106.3 108.4 109.9 112.2 112.6 113.4 112.9 113.4 114.9 115.3 114.1 113.2 107.2

PWL 96.1 104.5 107.4 108.4 111.0 114.3 114.0 115.3 112.9 113.4 115.9 116.8 116.4 116.4 108.0

PIN 025 18-INCH C-FAN 38 DEGREE BLADE ANGLE 9160 RPM DATE 11/27/72 TIME 11-48-24

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1383. N ( 311. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 15.0 C ( 59.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**--13 W
50	62.7	64.2	66.0	67.7	69.2	70.7	71.0	72.5	72.2	72.7	73.2	73.7	73.5	75.0	74.7	74.7	111.3
63	65.2	66.7	68.5	69.7	70.5	71.7	72.2	72.7	71.7	73.2	74.7	76.7	78.0	79.2	79.2	79.0	113.7
80	67.5	69.0	70.5	71.0	71.5	72.0	72.2	72.7	74.7	76.0	78.0	79.7	80.7	81.7	82.7	81.7	116.6
100	72.5	74.0	75.5	76.5	77.0	77.5	77.5	78.0	79.0	80.2	81.0	82.2	82.7	82.7	82.7	82.0	118.8
125	74.5	76.0	77.5	78.5	79.0	79.5	79.5	79.5	79.0	80.0	80.0	81.0	81.5	82.2	82.2	82.2	118.5
160	74.7	76.0	77.0	78.0	78.5	79.0	79.0	79.0	80.0	80.2	80.7	81.5	80.5	82.0	84.7	86.0	119.3
200	77.2	78.2	79.0	79.2	79.2	79.5	79.7	79.5	80.0	80.7	82.0	82.0	82.5	83.0	84.0	84.2	119.9
250	81.0	81.5	81.7	81.2	80.7	80.7	80.7	80.0	79.5	81.5	83.0	83.0	82.7	82.7	83.2	84.0	120.5
315	79.2	80.0	79.7	80.0	81.2	82.2	81.7	81.5	80.7	81.5	81.5	80.7	81.5	82.7	83.0	84.0	120.3
400	77.7	77.7	78.0	79.0	80.5	80.7	79.7	79.2	79.2	79.2	79.7	79.5	80.0	81.0	80.7	81.5	118.5
500	78.2	78.5	79.5	80.5	80.7	80.2	80.5	80.0	80.2	80.0	80.5	80.2	80.0	82.0	81.2	81.2	119.1
630	79.2	79.5	81.2	80.7	80.5	80.0	80.2	80.5	79.7	80.5	80.7	81.2	82.0	81.5	82.0	81.7	119.5
800	81.5	81.0	81.2	81.0	81.5	81.7	81.2	81.5	80.2	81.2	82.0	82.2	82.2	83.0	83.0	82.2	120.1
1000	81.7	82.0	82.0	82.0	82.2	82.0	82.0	82.5	82.0	82.7	82.7	83.5	83.2	83.7	84.0	82.0	121.0
1250	81.2	81.2	82.5	82.0	83.7	83.0	83.0	82.7	83.2	83.0	83.5	84.2	85.0	85.5	83.5	82.5	121.3
1600	84.0	84.7	85.2	84.5	87.2	84.5	85.5	84.7	87.2	86.0	86.7	88.0	90.0	90.2	85.0	85.2	125.7
2000	81.2	80.7	82.0	82.0	81.7	82.5	81.5	81.2	81.5	82.0	82.7	85.0	83.5	83.5	82.5	81.2	121.1
2500	80.7	80.5	82.0	81.7	82.2	82.5	81.5	81.2	81.5	82.0	82.7	85.0	86.0	84.0	83.0	81.5	121.8
3150	82.7	81.0	82.7	82.2	83.5	84.7	83.5	82.7	81.7	81.5	84.0	87.2	90.0	86.2	84.2	81.5	123.7
4000	80.5	82.0	84.5	84.0	83.0	83.0	82.5	82.0	82.2	83.5	85.7	86.5	85.7	84.5	83.5	80.0	122.8
5000	79.5	81.0	82.7	83.0	82.0	82.2	82.2	82.0	82.0	83.0	84.2	85.2	84.7	83.5	82.7	79.0	122.0
6000	81.6	82.8	84.8	83.8	82.6	82.8	82.6	82.1	81.3	81.3	82.3	85.6	84.3	84.1	83.3	79.6	122.1
8000	79.7	82.2	80.7	80.4	80.7	82.9	84.7	81.4	78.9	80.9	81.9	82.9	84.7	84.2	83.2	78.4	121.5
10000	77.0	78.8	79.3	79.8	79.3	80.3	79.5	78.3	77.3	78.0	80.3	81.5	81.5	82.3	81.5	76.5	119.3
12500	77.2	78.0	79.5	80.2	80.0	79.5	79.0	78.0	77.0	78.0	79.7	81.7	81.5	82.5	80.5	75.7	119.4
16000	74.7	75.7	77.2	78.9	77.2	77.9	77.2	75.2	75.2	76.2	78.7	79.9	80.4	81.2	78.7	74.2	118.2
20000	72.9	73.6	74.6	76.1	75.6	75.6	74.6	73.1	72.9	74.4	76.4	77.9	78.4	78.6	77.4	72.1	116.8
25000	69.4	69.9	71.4	74.2	72.2	72.2	71.2	69.7	69.4	70.7	72.7	74.4	75.7	76.2	74.7	69.7	114.7
31500	65.8	66.6	67.8	73.3	68.6	68.6	66.8	66.3	65.8	67.1	69.6	71.1	72.8	72.6	70.8	65.8	113.0
40000	73.2	93.1	94.4	94.1	94.7	94.5	94.4	93.8	94.2	94.4	95.4	96.8	97.6	96.9	95.2	93.7	134.0
DB(A)	93.9	94.1	95.2	95.1	95.4	95.4	95.4	94.8	95.0	95.5	96.5	97.6	98.3	98.0	97.1	96.1	135.1

PWL 136.8 106.5 107.9 107.6 108.3 108.6 108.1 107.5 108.1 108.0 109.3 110.9 112.2 111.0 109.4 107.8

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PNL 90.6 98.2 101.4 104.3 106.2 106.8 107.0 108.0 108.0 109.1 110.3 111.0 108.6 105.4 101.6

PNLT 91.8 98.7 101.4 105.8 106.2 107.8 107.0 109.6 109.2 110.3 111.6 112.9 110.5 105.4 102.7

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 1748. N ( 393. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 15.0 C ( 59.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M																PWL RE 10**-13 M
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	54.2	65.2	66.2	68.2	69.0	71.0	71.7	72.7	73.0	73.7	74.5	75.0	75.2	76.0	75.7	76.2	112.3
63	66.7	66.7	66.5	67.7	68.7	69.2	70.5	71.0	73.0	73.7	75.5	77.0	78.7	79.2	80.7	80.0	114.4
80	68.5	70.0	68.7	69.5	70.2	71.7	73.0	74.0	75.7	78.5	80.2	81.5	83.5	84.5	84.2	83.5	118.6
100	73.5	73.7	73.5	75.0	75.7	77.0	77.7	79.2	80.0	81.7	83.0	84.2	85.0	85.0	85.0	84.5	120.7
125	76.2	77.0	76.5	77.0	78.0	78.7	79.0	80.5	81.5	81.7	83.0	83.7	83.5	84.0	83.7	83.7	120.5
160	79.0	78.0	78.0	77.7	82.2	85.0	86.7	87.5	87.2	84.2	82.7	84.5	85.0	89.0	88.7	89.5	124.6
200	80.0	79.2	79.5	79.5	81.0	83.0	84.5	85.2	85.0	83.7	83.7	84.5	85.2	87.2	87.7	88.2	123.4
250	83.2	83.2	82.5	81.7	81.0	81.0	81.2	81.2	82.0	83.7	84.5	85.5	84.7	83.7	85.0	85.7	122.1
315	83.0	83.2	81.0	81.0	81.7	82.2	82.0	82.0	81.7	82.2	83.0	84.2	84.5	85.2	86.2	85.7	122.0
400	81.7	82.0	79.7	81.5	82.2	81.5	81.5	81.0	81.5	81.5	82.5	82.2	82.7	83.5	85.0	84.7	121.0
500	81.5	81.7	82.0	82.5	82.5	81.7	81.7	81.5	81.5	82.2	82.5	83.2	83.0	84.0	84.5	83.5	121.2
630	83.5	83.2	82.7	82.7	82.0	81.5	81.7	82.2	83.0	82.5	83.0	83.2	83.7	83.7	83.7	84.2	121.5
800	83.2	83.2	82.7	83.0	81.7	82.2	82.7	82.5	83.0	83.5	84.0	84.7	85.5	86.0	85.5	84.2	122.5
1000	80.5	81.2	82.2	83.0	83.5	83.2	82.7	82.7	84.5	83.7	85.2	86.0	85.7	86.5	86.5	84.7	123.2
1250	82.0	82.2	82.2	83.0	83.5	84.5	84.5	84.2	84.7	84.7	86.2	86.0	86.5	86.2	86.0	84.5	123.6
1600	83.0	84.0	83.5	83.5	84.5	84.5	84.5	84.5	84.7	84.2	85.7	86.5	86.5	86.2	85.5	83.7	123.8
2000	81.0	90.0	89.0	87.0	88.2	88.2	88.7	91.2	89.7	88.5	91.0	93.0	91.2	90.0	92.2	87.5	128.9
2500	84.2	83.7	84.7	85.2	84.5	85.0	84.5	85.0	85.0	85.0	86.7	87.7	87.0	86.2	85.5	82.7	124.3
3150	84.5	85.0	84.5	84.5	84.7	84.5	84.5	83.5	84.0	84.5	86.5	87.5	88.0	87.0	85.0	82.7	124.3
4000	87.0	85.7	87.0	86.5	90.0	91.2	90.2	89.0	88.7	88.7	89.2	91.0	92.7	90.5	86.7	85.0	128.4
5000	87.7	87.7	85.2	85.0	86.0	86.0	85.2	85.0	85.5	85.0	86.0	87.2	88.0	86.7	85.0	81.7	124.7
6700	84.5	86.5	87.0	87.5	86.7	86.0	87.7	86.7	85.5	87.2	87.7	89.5	90.7	89.5	86.5	82.5	126.6
8000	86.8	86.3	84.1	86.1	87.3	85.6	85.1	84.3	84.1	84.6	86.3	87.3	88.1	87.3	84.8	80.8	124.8
10000	82.9	83.2	83.4	82.9	83.9	84.9	86.2	84.7	83.2	82.9	84.2	87.4	86.4	86.2	84.7	79.7	124.0
12500	83.3	81.0	81.8	82.3	82.0	82.0	81.8	82.5	81.0	81.8	83.5	85.5	85.5	85.0	82.8	77.8	122.4
16000	70.0	80.2	81.5	81.7	82.0	82.0	81.7	81.0	81.0	82.0	84.2	84.7	85.7	85.7	83.0	77.2	122.6
20000	77.4	78.2	78.9	79.9	80.2	80.2	79.9	78.9	78.7	79.2	81.7	83.7	83.9	84.2	82.2	75.9	121.3
25000	74.9	75.6	77.1	77.6	78.1	77.9	77.6	76.4	76.4	77.1	79.4	81.6	82.4	81.9	79.6	73.4	119.8
31500	71.2	71.9	73.9	74.2	74.2	74.2	73.7	73.2	72.7	74.2	76.9	78.4	79.7	79.2	76.4	70.7	117.8
40000	67.1	68.3	69.3	70.1	70.3	70.3	70.1	69.1	69.1	70.3	73.3	74.6	76.3	75.3	72.8	67.6	115.6

DB(A) 97.1 96.9 96.8 96.7 97.6 97.7 97.7 97.6 97.5 97.3 98.7 100.1 100.3 99.3 98.6 95.9 137.1

DB(L) 97.6 97.4 97.3 97.3 97.3 98.1 98.4 98.5 98.4 98.4 98.2 99.5 100.8 101.1 100.7 100.1 98.5 138.1

PN 110.8 110.5 110.5 110.4 112.1 112.7 112.4 111.5 111.9 111.8 111.8 112.7 114.2 115.0 113.9 112.9 110.2

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PN 94.6 100.8 104.2 108.2 110.3 111.1 111.0 111.8 111.8 112.6 113.6 113.7 111.5 109.0 104.0

PNLT 96.7 102.4 104.2 109.7 112.3 112.9 113.1 113.4 113.1 114.2 115.6 115.2 112.8 111.2 105.4

PUN 027 18-INCH O-FAN 52.6 DEGREE BLADE ANGLE 9385 RPM DATE 11/27/72 TIME 11-48-31

MODEL DIAMETER = 0.457 M ( 1.50 FT) , MODEL THRUST = 2607. N ( 586. LB) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT)  
 TEST TEMPERATURE = 11.7 C ( 53.0 F) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ HZ	SPL AT AZIMUTH ANGLE (DEG) AND RADIUS OF 7.62 M										PWL RE 10**-13 W						
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	68.7	67.5	69.5	70.5	72.2	74.0	75.7	76.2	77.5	77.0	77.7	78.0	78.2	79.5	79.5	79.7	115.7
63	70.7	69.2	70.0	70.7	71.7	72.2	73.5	74.2	75.5	76.2	77.2	79.7	80.7	82.2	84.2	84.2	117.4
80	73.0	72.0	72.2	72.7	74.2	75.0	77.0	78.5	80.0	81.0	82.5	84.2	85.2	87.0	87.0	86.5	121.3
100	77.7	78.5	78.2	79.0	80.2	81.0	82.0	83.2	84.5	86.0	87.0	88.2	88.5	89.5	89.2	88.0	124.7
125	79.5	80.0	80.0	81.0	82.0	83.0	83.2	84.5	85.2	85.7	86.2	86.5	87.2	87.2	87.0	86.7	123.9
160	78.2	78.7	79.7	81.0	82.5	83.7	84.7	85.0	84.7	85.0	86.0	86.5	87.0	87.0	88.2	89.5	124.3
200	81.2	81.7	81.2	81.5	82.5	83.2	83.5	85.0	85.5	86.5	87.5	88.0	89.2	90.0	90.7	91.0	125.8
250	86.5	87.0	86.0	85.5	85.2	85.0	85.5	86.7	87.7	88.0	89.5	90.0	90.0	91.0	92.7	92.7	127.3
315	95.0	85.5	85.5	85.0	86.0	86.5	86.2	87.0	87.7	88.0	88.0	89.2	90.0	91.0	90.5	91.2	127.0
400	84.2	85.0	85.0	86.5	87.2	86.2	86.5	85.5	86.0	86.0	86.7	87.7	88.5	89.5	89.5	90.2	126.0
500	85.7	86.0	86.0	86.5	86.7	86.5	86.5	86.5	86.7	87.2	87.0	87.7	88.7	88.5	88.5	89.0	125.9
630	86.5	86.5	86.5	86.7	86.7	86.2	86.7	87.0	87.0	87.0	87.5	88.0	88.5	87.7	88.2	89.0	126.0
800	94.5	85.5	86.5	86.5	86.5	87.5	87.0	87.5	87.7	88.0	88.7	89.5	90.0	89.7	88.7	91.0	127.0
1000	85.0	84.0	86.2	87.0	87.7	87.2	87.0	88.2	88.0	89.0	90.0	90.0	90.0	90.2	89.2	91.0	127.5
1250	85.5	84.7	86.2	87.0	87.2	87.7	88.5	88.5	89.0	89.2	89.7	90.5	90.0	90.0	89.7	88.7	127.6
1600	87.2	87.2	88.0	88.2	88.5	88.5	90.7	89.5	90.0	90.2	91.0	92.7	91.7	91.0	89.7	88.5	128.9
2000	90.5	90.2	93.0	95.7	92.2	93.0	99.0	93.2	94.2	97.2	97.2	100.5	99.7	98.5	95.7	91.5	135.6
2500	85.0	85.7	87.7	88.5	88.5	88.5	88.5	88.7	89.7	90.0	91.0	92.2	91.0	90.5	89.5	87.0	128.5
3150	86.0	86.2	86.5	87.2	87.7	88.2	87.5	88.0	89.0	89.2	90.5	93.2	92.0	91.0	89.2	87.0	128.5
4000	85.7	89.2	89.2	89.2	89.5	91.0	89.5	88.7	91.0	91.0	90.7	93.0	95.5	91.0	89.5	87.7	130.0
5000	84.7	84.5	86.7	87.0	87.7	87.7	88.0	88.2	87.7	89.2	89.2	90.7	90.2	89.7	87.7	85.2	127.5
6300	84.8	85.3	87.1	87.8	87.8	88.6	88.6	89.1	89.3	90.1	90.1	91.1	90.8	90.1	88.3	85.1	128.2
8000	85.2	85.2	86.7	86.7	87.7	88.2	87.7	88.2	88.9	88.9	90.4	90.7	89.4	89.4	87.2	83.7	127.6
10000	83.0	83.5	85.3	86.0	85.3	86.3	86.5	86.5	86.5	87.0	88.3	89.8	88.8	87.8	85.3	82.5	126.2
12500	81.9	82.4	82.9	83.4	83.6	84.4	84.4	84.1	84.9	85.6	86.4	87.9	87.6	86.9	84.1	80.9	124.8
16000	80.7	80.9	82.7	83.7	83.7	83.9	83.7	83.2	83.9	84.7	86.2	87.4	87.4	86.7	84.2	80.4	124.5
20000	78.4	78.9	80.4	81.1	81.9	81.6	81.6	81.9	82.1	82.9	83.9	85.6	85.4	84.6	82.4	78.9	123.1
25000	77.7	76.9	78.7	79.2	79.7	79.4	79.2	79.9	79.9	80.7	82.2	83.7	83.2	82.9	80.4	77.2	121.8
31500	72.8	73.3	74.8	75.1	75.6	75.8	75.8	76.1	77.1	77.6	79.3	80.8	80.8	80.1	78.1	74.1	119.8
40000	72.8	70.1	71.1	71.8	72.3	72.3	72.3	72.6	73.3	74.1	75.3	77.3	77.3	77.1	74.8	71.3	117.9

DB(A) 98.0 98.4 99.8 101.0 100.2 100.7 102.9 100.7 101.5 102.7 103.1 105.2 104.9 103.7 102.0 100.4 141.3

DB(L) 98.7 99.1 100.2 101.2 100.7 101.2 102.9 101.4 102.1 103.1 103.6 105.4 105.2 104.5 103.3 102.6 141.9

PWL 111.6 112.5 113.4 114.9 113.7 114.5 116.9 114.4 115.2 116.7 117.1 119.3 118.9 118.0 116.3 114.1

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL 96.4 103.8 108.7 109.8 112.2 115.6 113.9 115.1 116.7 116.9 118.7 117.6 115.7 112.4 108.0

PWL 97.7 105.5 111.1 111.0 113.7 118.8 115.2 116.5 119.1 119.0 121.4 120.4 118.3 114.4 109.2

MODEL DIAMETER = 0.457 M ( 1.50 FT ) , MODEL THRUST = 2940. N ( 661. LB ) , MICROPHONE RADIUS = 7.62 M ( 25.0 FT )  
 TEST TEMPERATURE = 11.7 C ( 53.0 F ) , TEST RELATIVE HUMIDITY = 68.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10** - 13 M
50	68.2	68.5	70.0	72.5	73.7	75.5	76.0	77.5	78.0	79.0	79.7	80.0	80.0	80.7	81.5	81.2	117.3
63	70.5	70.7	71.5	71.7	72.7	74.0	74.2	75.5	76.0	77.7	79.2	80.7	82.5	83.7	85.0	85.5	118.6
80	73.7	73.0	73.0	74.0	74.7	76.2	77.7	79.0	80.7	82.5	84.0	86.0	87.2	87.7	88.7	87.5	122.6
100	78.7	79.0	79.5	79.7	81.2	82.2	83.2	85.0	85.7	87.7	89.2	89.7	91.0	91.0	91.0	89.2	126.5
125	81.0	80.2	81.2	81.7	83.2	83.7	84.7	85.2	86.0	87.7	88.2	89.0	89.2	89.2	89.7	88.5	125.8
160	80.0	80.2	81.0	82.2	85.2	86.7	89.5	91.0	89.5	88.5	87.2	88.7	92.2	90.2	91.7	94.0	128.2
200	81.5	81.7	82.0	82.2	84.0	84.5	86.0	87.2	88.0	88.7	89.2	90.2	91.5	92.2	93.7	95.5	129.9
253	87.7	87.5	87.2	86.5	86.5	87.5	87.5	89.0	90.0	91.2	92.0	93.0	93.5	93.2	93.7	95.5	129.9
315	87.7	87.5	87.0	87.0	88.0	88.0	88.5	89.0	89.7	89.7	90.2	91.2	91.7	92.2	92.5	93.0	128.8
400	87.7	87.7	88.0	88.5	89.0	88.2	88.5	88.0	88.0	88.7	89.7	90.7	92.0	92.5	91.7	92.0	128.5
503	88.5	89.0	88.5	89.5	90.0	89.0	88.5	88.2	89.2	89.0	89.0	89.7	89.7	91.2	92.5	92.2	128.4
630	88.7	87.7	88.7	89.2	88.5	88.0	88.5	88.7	88.5	89.2	90.0	90.7	91.0	90.2	90.7	91.5	128.2
800	88.0	87.7	88.2	89.5	89.5	89.0	89.2	88.5	89.7	89.7	90.7	91.7	92.0	92.0	92.0	91.5	129.0
1003	88.0	87.5	88.0	89.2	89.0	89.2	89.2	89.5	90.0	90.7	92.0	92.0	92.2	92.5	91.5	90.0	129.3
1250	87.2	88.0	88.5	89.0	89.2	89.7	89.5	90.2	90.5	91.5	92.5	92.0	92.2	92.7	91.7	90.2	129.7
1603	89.2	89.5	89.7	89.2	90.0	90.2	90.7	91.5	91.2	91.7	92.7	93.5	93.2	92.5	91.7	90.0	130.3
2003	93.0	99.2	97.0	95.0	94.2	96.2	95.0	97.0	98.2	100.5	101.5	101.5	101.5	101.0	102.2	90.5	138.1
2500	88.0	89.0	89.5	90.2	90.0	90.2	90.7	91.5	91.7	92.7	93.5	94.2	93.7	93.0	92.5	88.5	130.8
3150	88.5	88.0	88.5	89.2	89.0	90.0	90.7	90.5	91.0	91.7	93.2	94.0	93.7	92.5	91.0	88.7	130.3
4003	89.2	90.0	89.0	89.2	90.2	90.0	92.5	91.5	91.2	93.0	95.7	94.0	98.0	93.2	90.7	89.2	132.0
5000	86.7	87.0	88.0	88.5	88.5	88.5	89.2	89.2	89.7	91.0	91.7	92.5	93.0	92.0	89.2	87.0	129.3
6300	88.1	88.6	90.3	89.3	90.3	90.6	90.3	90.1	91.6	92.1	92.8	93.1	93.8	92.3	89.8	87.3	130.4
8000	87.9	86.9	87.9	88.4	88.9	89.4	89.2	89.7	90.2	91.7	91.9	92.7	92.7	91.7	88.9	85.9	129.6
10000	86.0	86.0	86.3	86.8	87.3	87.3	87.3	87.5	89.3	90.0	91.0	91.0	92.3	89.8	88.0	84.5	128.3
12503	85.4	83.0	84.4	84.9	85.9	85.6	85.6	85.9	85.9	87.6	88.6	89.6	90.9	89.1	86.6	83.1	126.8
16000	84.4	83.4	84.7	83.9	84.4	85.2	84.9	85.7	85.9	87.4	88.2	89.7	90.2	88.7	86.2	82.4	126.6
20000	81.1	81.6	82.9	81.9	82.4	82.9	82.9	83.4	84.1	85.6	87.6	87.6	88.6	86.9	84.4	81.1	125.5
25000	79.2	78.9	80.2	80.2	80.7	80.9	80.7	81.4	81.9	83.7	84.7	85.7	86.4	85.4	82.9	79.2	124.1
31500	75.8	75.6	75.8	75.8	76.8	77.6	77.8	77.8	78.3	80.1	81.8	82.8	83.3	83.1	80.1	76.6	121.9
40000	72.8	71.6	71.8	72.1	72.3	72.8	73.3	74.1	74.1	76.3	78.6	79.3	79.6	78.6	76.8	72.8	119.7
DR(A)	100.6	103.0	102.2	101.8	101.8	102.5	102.6	103.2	103.8	105.3	106.4	106.5	107.1	106.0	106.0	101.5	143.5
DR(L)	101.3	103.0	102.5	102.3	102.5	102.9	103.2	103.8	104.3	105.6	106.6	106.9	107.6	106.7	106.7	104.4	144.1
PWL	114.1	116.9	116.1	115.4	115.4	116.3	116.4	117.1	117.9	119.4	120.4	120.7	121.1	120.3	120.4	115.5	

FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS

PWL 101.1 106.5 109.3 111.5 113.9 115.1 116.6 117.8 119.4 120.3 120.1 119.8 118.0 116.5 109.3

PWLT 104.4 109.0 111.0 112.9 115.9 116.5 118.4 120.0 122.2 123.1 122.7 122.5 120.7 119.9 109.8



18 INCH MODEL--43 DEGREE BLADE ANGLE AT 11300 RPM

DATE 01/31/73 TIME 10-29-33

MODEL DIAMETER = 0.457 M ( 1.50 FT) ; MODEL THRUST = 2513. N ( 565. LB) ; MICROPHONE RADIUS = 3.05 M ( 10.0 FT)  
 TEST TEMPERATURE = 7.5 C ( 45.5 F) ; TEST RELATIVE HUMIDITY = 60.0 PCT  
 DATA IS CORRECTED TO STANDARD TEMPERATURE (25C) AND RELATIVE HUMIDITY (70PCT) ATMOSPHERIC SOUND ABSORPTION

FREQ. HZ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**--13 W
50	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	93.4	-0.0	-0.0	-0.0	113.0
63	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	96.2	-0.0	-0.0	-0.0	115.8
80	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	98.8	-0.0	-0.0	-0.0	118.4
100	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	99.0	-0.0	-0.0	-0.0	118.6
125	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	98.2	-0.0	-0.0	-0.0	117.8
160	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	98.7	-0.0	-0.0	-0.0	118.3
200	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	101.2	-0.0	-0.0	-0.0	120.8
250	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	99.7	-0.0	-0.0	-0.0	119.3
315	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	101.8	-0.0	-0.0	-0.0	121.4
400	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	102.9	-0.0	-0.0	-0.0	122.5
500	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	101.4	-0.0	-0.0	-0.0	121.0
630	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	102.0	-0.0	-0.0	-0.0	121.6
800	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	101.8	-0.0	-0.0	-0.0	121.4
1000	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	101.7	-0.0	-0.0	-0.0	121.3
1250	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	101.5	-0.0	-0.0	-0.0	121.1
1600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7	0.0	0.0	0.0	122.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106.4	0.0	0.0	0.0	126.0
2500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	104.4	0.0	0.0	0.0	124.0
3150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	103.9	0.0	0.0	0.0	123.6
4000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	104.8	0.0	0.0	0.0	124.5
5000	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	106.6	0.1	0.1	0.1	126.2
6300	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	107.5	0.1	0.1	0.1	127.2
8000	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	105.8	0.2	0.2	0.2	125.5
10000	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	105.6	0.2	0.2	0.2	125.4
12500	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	103.3	0.3	0.3	0.3	123.2
16000	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	103.4	0.4	0.4	0.4	123.4
20000	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	102.3	0.6	0.6	0.6	122.5
25000	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	100.4	0.7	0.7	0.7	120.9
31500	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	97.8	0.8	0.8	0.8	118.7
40000	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	94.8	0.8	0.8	0.8	116.3
DB(A)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	116.3	12.0	12.0	12.0	136.0
DB(L)	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	117.5	14.9	14.9	14.9	137.3
PWL	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2	130.1	24.2	24.2	24.2	
FOLLOWING TWO LINES FOR SIDELINE RATHER THAN CONSTANT RADIUS																	
PWL	8.5	14.6	18.0	20.3	21.8	22.9	23.6	24.1	24.2	24.1	24.1	23.6	128.9	21.8	20.3	18.0	
PWLT	8.5	14.6	18.0	20.3	21.8	22.9	23.6	24.1	24.2	24.1	24.1	23.6	128.9	21.8	20.3	18.0	

RPN 001 18-INCH C-FAN 57.4 DEGREE BLADE ANGLE 6600 RPM DATE 11/27/72 TIME 11-47-10

FULL-SCALE DIAMETER = 3.16 M ( 10.37 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FRFQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 WATTS
50	50.0	55.8	58.7	61.4	63.4	64.7	66.2	66.3	67.2	67.6	66.9	67.5	68.1	67.4	63.4	132.4
63	49.3	55.3	59.3	62.6	63.9	64.5	65.4	66.3	66.9	67.3	67.2	67.2	66.9	65.9	62.6	132.0
90	50.4	57.0	61.6	64.3	65.4	66.4	66.9	67.6	68.7	69.1	68.9	68.1	68.1	66.5	63.8	133.5
109	52.8	59.4	63.3	64.5	66.6	67.1	68.4	68.8	69.7	70.1	70.2	70.1	69.1	67.5	64.1	134.7
125	54.1	61.1	64.5	66.5	67.8	69.4	70.1	71.0	71.2	71.5	71.3	71.4	70.3	68.0	64.7	136.1
140	54.5	61.6	65.0	67.4	69.5	69.9	71.1	72.0	72.6	73.5	73.6	72.9	71.8	69.9	64.7	137.5
201	60.1	73.7	77.1	78.2	77.8	80.3	75.6	78.0	74.6	83.7	84.1	86.3	88.8	88.4	78.1	150.4
250	55.3	64.8	68.3	70.6	71.7	73.3	73.0	74.6	74.6	75.9	76.0	77.0	77.7	76.8	68.0	141.3
315	55.2	62.2	66.2	69.0	70.1	71.7	72.0	72.6	73.5	73.9	74.5	74.7	73.1	70.0	62.9	138.7
400	56.1	63.5	67.9	70.5	71.4	72.6	73.5	74.3	74.4	75.8	76.0	75.8	74.4	72.3	66.6	140.4
500	55.3	64.4	67.9	70.5	71.4	72.6	73.5	74.3	74.4	75.8	76.0	75.8	74.4	72.3	66.6	140.4
630	54.7	62.4	65.4	67.7	69.0	71.0	71.7	71.2	71.8	73.4	73.4	75.2	72.8	71.7	63.4	138.7
800	53.1	61.7	66.0	68.6	70.4	70.3	71.6	72.0	72.7	73.2	74.3	73.8	72.9	69.6	63.5	138.8
1000	51.6	61.0	64.8	68.2	69.5	70.2	71.0	71.4	72.3	72.6	73.0	72.4	72.5	70.2	64.8	138.5
1250	48.4	57.4	62.3	64.6	66.5	67.0	67.8	68.4	68.4	70.0	70.8	70.2	70.5	68.4	58.8	136.0
1600	46.1	56.6	61.4	64.0	65.1	65.4	66.0	66.2	67.4	68.0	70.0	69.4	68.9	68.5	56.9	135.5
2000	42.6	53.8	59.1	62.1	63.8	64.1	64.5	64.3	64.9	66.0	67.3	66.9	66.3	64.3	54.3	133.7
2500	39.2	52.4	58.4	61.3	62.9	63.3	64.0	63.7	64.2	65.0	66.7	66.1	65.7	62.6	53.6	133.7
3150	33.6	49.4	55.1	58.6	60.1	61.6	61.1	61.2	61.8	62.7	63.6	63.6	62.3	59.1	49.6	132.1
4000	27.2	44.2	51.7	55.9	57.1	58.5	58.6	58.4	59.4	59.7	61.1	60.7	59.9	55.9	46.5	130.8
5000	20.7	40.0	47.6	51.7	53.3	54.2	54.3	53.9	55.4	56.4	57.3	57.5	56.8	52.2	42.6	128.4
6300	10.6	33.0	41.5	46.1	48.2	49.4	49.6	49.5	51.0	52.0	52.8	53.1	51.7	47.6	37.5	126.3
8000	-3.0	24.4	34.2	39.7	42.5	44.1	44.5	44.6	46.2	47.1	47.9	48.2	46.0	42.2	31.2	124.1
10000	-21.4	13.4	25.5	32.3	36.0	38.1	38.7	39.2	40.8	41.7	42.3	42.6	39.5	35.8	23.5	122.0

DR(A) 60.8 70.2 74.2 76.7 77.9 78.9 79.2 79.6 80.1 81.7 82.3 82.7 82.8 81.3 72.8 151.2

DR(L) 56.3 76.4 80.1 81.9 82.6 84.2 83.3 84.3 84.2 87.3 87.6 88.9 90.2 89.5 80.2 153.5

PNI 70.5 82.5 86.8 89.0 89.8 91.3 90.4 91.0 91.2 94.2 94.8 95.7 96.4 95.0 85.8

PNLT 71.4 84.2 88.5 90.5 90.9 92.8 91.0 91.8 91.2 95.7 96.3 97.6 98.7 97.5 87.8

RUN 302 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 6639 PPM DATE 11/27/72 TIME 11-47-13

FULL-SCALE DIAMETER = 3.13 M ( 10.25 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FREQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**13 WATTS
50	52.2	59.2	62.1	64.8	67.3	68.9	69.6	70.0	70.6	71.5	70.8	70.4	70.3	69.5	67.3	135.7
63	51.2	57.7	61.3	64.8	66.5	67.4	68.6	69.2	69.6	69.5	70.1	69.1	68.5	67.5	65.8	134.4
80	51.6	58.0	63.2	66.2	67.3	68.9	68.8	69.5	70.6	70.7	70.3	69.4	68.3	67.9	65.2	135.1
100	52.5	59.8	63.5	65.9	66.8	68.3	69.3	70.2	70.6	71.5	71.1	70.5	69.3	67.7	65.2	135.4
125	55.0	61.5	64.6	66.7	67.7	69.3	70.0	71.4	72.1	71.9	71.7	71.8	70.2	68.4	65.6	136.4
150	55.4	62.0	65.9	67.8	69.7	70.5	71.0	72.6	73.3	74.1	73.7	73.3	71.7	69.1	65.6	137.8
200	61.0	68.9	75.3	74.1	78.4	76.7	75.2	75.6	75.0	81.9	80.5	87.4	87.4	82.8	74.8	148.3
250	56.2	63.8	67.8	69.2	72.3	72.7	73.4	73.9	73.7	75.4	75.1	77.7	77.1	73.2	67.0	140.6
315	55.9	62.6	66.2	68.7	70.8	72.4	72.6	72.8	73.5	74.8	74.9	75.4	73.6	69.5	64.9	139.1
400	58.5	66.4	71.5	71.1	72.5	72.8	72.8	74.5	75.1	77.5	78.3	79.6	77.5	73.6	68.5	142.2
500	54.1	62.2	66.4	68.5	70.1	71.0	71.8	72.4	73.6	74.4	75.8	76.0	72.9	70.0	64.9	139.3
630	53.7	62.4	66.4	67.7	70.8	72.5	71.9	71.9	72.5	73.7	74.7	76.0	72.5	70.4	63.2	139.2
800	53.1	61.0	65.5	68.2	69.2	70.9	71.3	73.1	72.9	74.6	74.1	74.4	72.7	69.0	63.0	138.9
1000	51.9	60.6	64.0	67.3	68.1	70.0	70.8	71.5	72.4	73.0	73.3	73.5	70.8	68.8	63.0	138.1
1250	49.1	58.1	62.0	64.9	66.5	67.7	68.0	68.2	69.6	70.5	71.2	70.9	69.5	66.2	59.5	136.1
1600	45.4	56.6	61.2	63.6	65.8	66.7	66.1	66.6	67.2	68.9	69.9	70.5	68.5	65.4	57.5	135.4
2000	41.6	53.6	58.6	62.1	63.3	64.1	64.3	64.0	64.9	67.0	67.3	67.9	65.8	61.8	54.8	133.5
2500	38.4	51.4	57.1	60.5	61.9	62.8	62.9	63.4	64.1	65.4	66.2	66.3	64.9	60.8	53.1	133.1
3150	33.1	47.6	53.6	57.9	59.6	60.3	60.6	61.2	61.8	62.9	63.6	63.6	61.6	57.4	49.6	131.5
4000	25.8	43.5	50.6	54.4	56.9	57.5	57.6	58.0	58.9	60.2	60.6	60.8	59.2	54.2	46.4	130.2
5000	20.2	39.6	47.1	51.0	53.3	54.3	54.4	54.8	55.8	57.6	58.1	58.3	55.8	51.2	43.6	128.5
6300	10.7	32.8	41.5	46.4	48.8	50.5	50.9	51.1	52.1	53.1	54.7	54.5	52.3	47.2	39.5	127.2
8000	-2.3	24.3	34.9	41.0	43.7	46.2	46.9	47.0	48.0	48.2	50.8	50.2	48.2	42.4	34.4	125.9
10000	-20.2	13.6	26.8	34.5	37.7	41.1	42.3	42.3	43.4	42.7	46.3	45.1	43.2	36.5	27.8	124.5

DR(A) 61.1 69.5 74.1 75.9 77.8 78.8 79.0 79.7 80.3 81.9 82.3 83.6 82.0 78.4 71.9 150.8

DR(L) 67.0 74.7 79.6 80.5 83.0 83.4 83.4 84.2 84.6 87.0 86.8 89.9 89.2 85.2 79.0 153.1

PNL 71.5 80.7 86.0 87.3 90.0 90.2 90.1 91.0 91.7 93.9 94.0 96.7 95.5 91.6 84.7

PNLT 72.4 81.7 87.4 88.2 91.2 91.1 90.1 91.0 91.7 95.1 95.0 98.7 97.7 93.5 86.1

FULL-SCALE DIAMETER = 2.43 M ( 7.96 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)															PWL RE 10**-13 WATTS
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	50.7	66.5	68.9	70.3	71.8	73.2	75.1	76.3	77.9	78.8	78.9	78.4	77.6	76.8	75.9	142.8
63	59.2	65.0	68.3	71.1	72.8	73.4	75.1	75.8	76.6	77.3	77.4	77.4	77.1	76.1	74.0	141.9
80	57.9	64.0	69.0	71.5	72.8	73.8	74.1	74.8	75.4	75.8	75.6	76.1	76.1	74.7	73.3	141.0
100	58.3	65.1	68.8	71.0	72.8	73.6	74.5	75.5	76.6	76.3	75.3	74.8	74.6	73.7	71.8	140.7
125	59.1	65.3	69.4	71.5	72.5	73.6	74.8	75.4	76.4	76.2	76.3	75.8	74.7	73.5	71.4	140.9
160	58.2	65.8	69.7	71.9	73.5	74.3	75.0	76.4	76.5	77.4	77.3	77.1	76.2	73.6	71.2	141.7
200	57.3	65.2	70.1	72.4	73.9	75.5	76.3	77.2	78.3	78.4	78.5	78.2	76.9	74.4	70.6	142.6
250	57.5	65.0	70.2	72.8	74.4	76.2	77.2	77.8	78.5	79.1	78.9	78.7	76.9	74.3	70.2	143.1
315	62.2	68.9	72.9	80.4	84.0	85.6	86.7	88.1	84.2	83.6	87.2	88.4	86.3	81.2	73.4	151.4
400	62.0	69.2	72.8	79.8	83.2	85.1	86.1	87.2	83.7	83.5	86.6	87.9	85.7	80.6	72.3	150.9
500	58.5	66.9	71.6	74.0	75.3	76.3	77.0	78.5	79.1	80.5	80.7	79.8	77.3	73.7	68.6	144.2
630	62.4	67.6	71.4	74.1	75.2	77.2	77.6	80.4	79.7	80.6	81.6	81.7	78.7	74.1	69.4	145.3
800	59.5	66.2	69.9	73.4	74.1	76.0	76.8	78.5	78.9	79.3	79.8	79.7	77.9	73.4	68.2	144.1
1000	54.8	66.7	70.1	73.4	75.4	78.1	77.9	78.8	78.8	78.6	80.2	81.9	78.2	73.4	67.6	145.0
1250	53.6	63.9	68.2	74.2	75.2	75.7	76.7	77.7	78.3	79.2	78.5	78.7	76.0	72.2	65.5	143.9
1600	51.1	62.6	67.2	71.8	73.2	74.5	75.8	76.0	77.0	78.5	77.0	77.7	74.9	70.0	63.5	143.0
2000	48.6	61.6	66.4	69.6	70.1	71.9	72.1	73.3	75.4	76.3	75.8	76.2	73.1	68.9	61.6	141.6
2500	43.5	56.2	63.2	67.4	69.0	70.4	71.3	71.0	72.5	74.0	73.8	73.6	71.7	66.4	58.9	140.2
3150	38.7	53.7	59.9	64.7	66.5	68.5	69.1	69.7	71.4	71.5	72.4	73.0	70.0	64.7	57.2	139.5
4000	32.4	49.6	57.1	61.3	63.3	65.1	66.0	66.8	67.8	68.6	69.5	69.4	67.0	61.3	53.4	137.7
5000	26.6	46.2	54.2	58.3	60.7	62.6	63.5	64.3	65.3	66.3	67.0	67.4	64.7	59.3	51.0	136.4
6300	16.4	39.4	48.3	53.6	56.3	57.9	59.2	60.1	61.6	62.8	63.5	63.2	60.3	54.6	46.0	134.4
8000	2.7	31.0	41.7	47.3	51.2	52.7	54.6	55.4	57.1	58.4	58.6	58.7	55.7	49.1	39.9	132.9
10000	-16.0	20.2	33.4	39.9	45.1	46.6	49.3	49.9	52.0	53.2	53.0	53.3	50.1	42.5	32.1	131.4

DB(A) 66.2 74.4 78.6 83.1 85.1 86.8 87.6 88.8 88.0 88.6 89.5 90.2 87.6 83.0 76.6 155.8

DB(L) 71.2 78.4 82.5 86.8 89.2 90.8 91.7 93.0 91.6 91.9 93.2 93.9 91.9 88.0 83.5 158.1

PNL 76.0 85.0 90.0 94.6 97.0 98.7 99.6 100.7 99.7 100.4 101.4 102.1 99.8 95.3 88.6

PNLT 77.1 85.0 90.0 95.3 97.9 99.5 100.5 101.6 100.3 100.4 102.2 102.9 100.6 95.9 88.6

RUN 006 18-INCH O-FAN 57.4 DEGREE BLADE ANGLE 7881 RPM DATE 11/27/72 TIME 11-47-19

FULL-SCALE DIAMETER = 2.61 M ( 8.57 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FREQ Hz	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)										PWL RE 10**-13 WATTS					
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	56.7	62.2	66.0	68.7	70.5	72.0	73.2	73.9	73.8	74.6	74.5	74.3	74.5	73.2	71.0	139.3
63	54.8	60.8	66.0	69.7	70.2	71.5	72.5	72.6	72.8	73.6	73.0	72.8	72.2	71.9	69.7	138.2
80	55.2	62.8	66.7	69.2	70.4	71.5	72.2	72.6	73.6	73.9	73.5	72.8	72.2	70.9	68.7	138.3
100	56.6	63.1	66.9	69.2	70.2	71.3	72.7	73.4	74.0	73.9	74.5	73.8	72.4	71.2	68.9	138.7
125	57.8	63.7	67.4	69.3	71.7	72.5	73.2	74.4	74.7	74.6	75.5	75.5	73.9	71.6	69.4	139.6
160	56.1	63.6	68.0	71.1	72.1	72.7	73.9	75.1	76.2	76.1	76.9	75.9	74.6	72.1	68.8	140.5
200	56.4	64.0	68.5	71.5	74.3	74.4	76.6	76.5	78.0	79.3	78.9	77.4	76.1	73.7	69.3	142.3
250	55.7	65.7	73.9	79.0	88.0	82.6	89.9	88.5	91.4	93.8	93.6	89.6	88.2	86.0	78.4	155.3
315	59.9	66.5	69.6	72.1	75.0	75.1	77.3	77.2	78.9	79.4	79.8	78.1	77.0	73.6	68.8	143.2
400	58.5	65.8	69.5	71.5	73.4	74.0	75.5	75.9	76.8	77.2	78.3	77.2	75.6	72.3	67.0	141.8
500	62.0	70.3	75.0	72.4	74.3	76.5	76.2	77.1	78.3	79.3	78.9	82.0	77.3	74.9	68.0	144.3
630	55.9	64.0	68.6	70.8	71.9	72.9	74.1	74.6	75.2	76.1	77.1	77.1	74.7	70.8	66.3	141.0
800	57.0	63.0	70.4	72.4	72.6	74.9	76.7	75.7	77.1	76.5	77.2	76.4	74.8	71.6	65.6	142.0
1000	53.6	63.7	71.1	70.9	72.4	74.3	75.4	76.9	76.7	76.9	76.9	77.3	73.9	71.4	66.1	142.2
1250	52.4	60.4	66.5	68.7	70.3	73.2	74.3	74.6	74.6	75.3	75.3	75.7	72.5	69.5	62.0	140.6
1600	47.7	59.2	64.5	67.1	69.2	70.3	69.8	71.1	71.8	72.8	74.6	73.3	72.5	68.3	60.3	139.1
2000	44.7	57.3	61.3	65.0	67.4	68.1	68.5	68.9	69.6	70.4	71.2	71.6	70.2	65.8	57.5	137.4
2500	41.3	56.2	60.3	63.4	66.0	67.9	66.8	67.0	68.5	69.3	71.0	70.6	68.5	64.1	56.1	137.1
3150	35.8	51.3	56.8	60.8	62.6	63.6	64.6	64.8	66.0	66.3	68.1	68.1	65.6	61.0	52.8	135.3
4000	28.1	45.3	53.7	56.7	60.0	61.4	60.9	61.5	63.0	64.0	64.7	64.7	62.7	57.5	49.7	133.7
5000	22.0	41.1	48.9	53.5	55.8	57.5	57.4	58.2	59.4	61.0	61.1	62.0	59.6	53.7	46.4	131.7
6300	12.2	34.6	43.8	48.7	51.1	53.2	53.7	54.6	56.1	57.1	57.9	57.7	55.3	49.9	41.8	130.2
8000	-1.1	26.5	37.5	43.1	45.8	48.4	49.6	50.5	52.4	52.7	54.3	52.9	50.4	45.3	36.0	128.8
10000	-19.2	16.0	29.9	36.5	39.7	42.9	44.8	45.9	48.1	47.8	50.0	47.4	44.7	39.7	28.9	127.4

DB(A) 64.8 72.8 78.0 79.4 83.0 82.8 85.3 85.1 86.6 88.0 88.2 86.8 84.6 81.6 75.0 155.1

DB(L) 70.5 77.3 81.8 84.1 89.6 87.3 91.6 90.8 93.0 94.9 94.8 92.2 90.5 88.1 82.2 157.8

PNL 75.2 83.9 89.0 91.4 96.4 94.9 98.5 98.1 100.0 101.5 101.7 99.7 98.0 95.0 88.2

PNLT 76.8 85.7 91.0 92.6 98.7 96.2 100.6 100.0 102.2 103.9 104.1 101.7 99.9 97.0 89.8

PUN 007 18-INCH Q-FAN 52.6 DEGREE BLADE ANGLE 7063 RPM

DATE 11/27/72 TIME 11-47-22

FULL-SCALE DIAMETER = 3.10 M ( 10.17 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT )															PWL RE 10**-13 WATTS	
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150		
50	52.1	59.2	62.2	65.2	66.9	69.0	70.0	70.1	70.6	70.6	70.7	70.5	69.9	68.7	67.2	135.5	
63	52.1	57.8	62.2	65.2	67.2	67.8	69.0	69.4	69.6	70.4	69.7	69.8	68.7	67.2	66.0	134.7	
80	52.5	59.6	63.7	66.7	67.7	68.5	69.2	69.9	70.2	70.4	71.0	69.3	68.9	68.2	66.0	135.2	
100	53.6	60.0	63.9	66.3	67.7	68.5	69.5	70.4	71.0	71.1	71.5	70.3	68.9	67.8	65.6	135.6	
125	54.8	61.0	64.9	66.6	67.9	69.4	70.5	70.9	71.7	72.1	72.2	71.9	70.4	68.6	65.9	136.5	
150	54.8	61.4	65.0	67.6	69.6	70.2	71.1	72.8	73.0	73.3	73.4	72.4	71.6	69.3	65.8	137.5	
200	57.4	66.5	71.5	73.0	70.3	74.9	74.6	77.3	76.2	76.5	76.9	74.4	73.8	74.5	68.8	141.2	
250	58.7	68.7	73.7	74.2	71.2	77.1	75.9	79.3	77.4	77.8	78.4	75.1	74.0	76.0	69.7	142.7	
315	55.6	62.7	66.1	68.6	71.0	72.1	72.8	73.2	73.6	74.2	74.3	74.6	73.2	69.6	65.6	138.8	
400	56.7	67.8	69.7	70.3	70.6	71.2	71.8	72.9	73.5	73.9	76.8	75.0	73.9	71.0	65.2	139.8	
500	57.0	69.8	71.3	71.2	71.0	71.0	72.4	72.9	73.8	74.2	77.7	76.0	74.3	71.9	65.5	140.7	
630	53.9	63.9	68.4	67.6	70.5	70.4	71.7	71.1	72.2	74.1	73.7	75.1	73.5	69.8	64.2	138.9	
800	51.8	61.5	66.9	67.9	69.1	71.8	72.1	72.2	72.6	73.5	73.1	73.8	71.6	67.9	62.4	138.4	
1000	51.1	61.8	67.4	68.0	69.0	71.7	72.7	72.1	73.3	73.6	73.7	73.4	71.5	68.5	63.2	138.9	
1250	49.5	59.1	63.6	67.1	66.4	67.6	68.4	68.4	69.7	71.1	73.4	71.6	69.6	66.8	60.1	136.8	
1600	45.5	57.3	61.1	63.3	66.1	66.9	67.5	66.7	67.6	67.7	70.0	69.4	68.1	64.8	57.9	135.2	
2000	43.1	54.0	60.2	62.2	64.4	65.3	64.9	64.4	66.0	66.7	67.7	68.3	66.6	63.2	55.7	134.2	
2500	38.1	51.0	58.4	60.8	62.7	64.1	64.0	63.6	64.4	66.3	66.7	67.3	65.4	62.1	54.1	133.8	
3150	32.1	47.6	54.6	57.3	59.6	61.1	61.1	60.4	62.1	63.6	63.9	64.4	62.6	58.6	51.1	132.0	
4000	24.6	42.5	50.1	54.5	56.5	57.6	57.9	57.8	59.5	60.8	61.2	60.8	59.2	55.7	47.3	130.3	
5000	18.2	37.6	46.1	49.7	52.1	53.8	54.1	54.7	55.7	56.7	58.1	57.8	56.1	51.2	43.9	128.0	
6300	7.0	30.4	38.8	44.5	47.2	49.1	49.3	50.5	51.2	53.0	53.3	53.3	51.7	46.5	38.6	126.0	
8000	-7.6	21.5	30.5	38.4	41.6	43.8	44.0	45.8	46.2	48.8	48.0	48.2	46.6	40.9	32.3	123.9	
10000	-27.0	10.3	20.7	31.4	35.3	37.9	38.1	40.5	40.7	44.0	42.1	42.5	40.8	34.4	24.5	121.8	
DR (A)	60.9	71.7	75.6	76.6	77.5	79.2	79.7	80.0	80.6	81.4	82.5	81.9	80.2	77.5	71.5	148.9	
DR (L)	66.7	76.3	80.1	81.2	81.5	83.6	83.9	85.2	85.1	85.7	86.6	85.5	84.1	82.6	77.8	151.7	
PNL	70.9	82.5	86.3	87.9	88.8	90.8	90.7	92.1	92.0	92.8	93.9	93.3	91.6	89.3	83.1		
PNLT	70.9	84.0	87.3	88.4	88.8	91.4	90.7	92.8	92.0	92.8	93.9	93.3	91.6	90.0	83.1		

RUN 008 18-INCH C-FAN 52.6 DEGREE BLADE ANGLE 8311 RPM DATE 11/27/72 TIME 11-47-28

FULL-SCALE DIAMETER = 2.63 M ( 8.61 FT) , FULL-SCALE THRUST = 66723. N ( 15000. LB)

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)										PWL RE 10**-13 WATTS					
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	55.9	62.2	65.8	68.0	70.3	71.1	72.8	73.5	73.6	74.2	74.8	74.6	74.5	73.0	71.1	139.1
63	54.6	60.9	66.0	68.7	70.3	70.9	72.1	72.2	72.6	73.2	72.3	73.4	72.3	71.7	70.0	138.0
80	55.1	62.3	66.2	68.7	70.0	70.8	71.8	73.0	74.1	73.7	73.3	72.3	71.5	70.7	69.2	138.0
100	56.2	62.6	66.7	69.2	69.9	71.0	72.0	73.1	73.8	73.9	74.0	73.0	72.2	70.9	69.0	138.3
125	56.5	63.0	66.9	68.9	70.7	71.5	72.5	73.9	74.3	74.6	74.5	74.8	73.7	70.9	68.4	139.0
160	55.4	62.6	67.4	69.8	71.2	72.5	74.0	75.1	75.5	75.9	75.7	75.8	74.4	72.1	68.6	140.0
200	54.7	63.1	68.0	70.3	71.8	73.9	74.7	75.9	76.7	76.9	76.5	76.7	74.3	72.1	68.0	140.8
250	60.4	65.4	72.4	73.7	75.3	84.9	78.9	84.0	86.5	85.5	85.9	87.7	85.8	78.5	68.2	149.8
315	58.6	66.1	69.1	71.6	73.5	77.1	76.4	77.8	78.4	79.0	79.4	79.1	77.5	72.9	67.8	143.1
400	57.2	65.4	69.2	70.6	73.0	73.8	74.8	76.0	76.6	77.3	77.8	76.8	75.2	71.6	67.0	141.4
500	63.5	67.4	68.9	76.0	76.4	75.2	76.3	77.9	76.8	78.9	79.0	80.0	79.6	74.3	67.9	144.0
630	55.7	64.1	67.9	70.7	71.5	72.7	73.4	74.4	75.0	76.2	76.2	76.7	74.8	71.2	65.7	140.7
800	54.3	63.0	68.5	70.5	73.4	74.3	74.3	74.8	75.2	76.1	76.8	76.3	74.9	71.5	65.5	141.3
1000	54.4	65.6	68.4	71.8	73.3	74.0	75.0	76.2	76.6	76.7	77.0	77.3	74.6	71.3	65.9	142.1
1250	51.2	59.8	66.1	69.3	72.4	72.7	72.2	72.1	73.6	73.9	76.5	74.9	73.1	68.3	62.1	140.2
1600	47.4	59.1	63.0	67.8	68.9	69.0	70.0	70.3	71.5	72.3	73.3	73.7	71.9	68.0	60.7	138.7
2000	44.2	56.0	61.2	64.5	66.2	67.3	68.2	68.9	69.9	70.7	71.7	71.8	69.7	65.7	58.0	137.3
2500	40.3	53.0	59.7	63.2	65.3	66.2	66.8	67.6	68.5	69.3	70.6	71.4	69.5	64.4	57.2	137.1
3150	34.4	49.9	56.4	59.9	62.6	63.0	64.4	65.2	65.9	66.7	67.6	68.2	66.1	61.4	53.4	135.2
4000	26.8	44.3	52.2	56.2	58.5	60.7	61.4	61.8	63.0	64.3	65.2	64.9	63.0	58.2	50.4	133.7
5000	20.5	39.7	47.4	52.2	55.3	57.4	57.7	59.1	59.8	61.3	62.0	61.6	59.3	54.5	47.1	131.6
6300	9.8	32.7	41.7	47.0	49.7	51.8	53.0	54.7	55.9	57.0	57.5	57.3	54.9	49.8	41.9	129.7
8000	-4.4	24.1	34.8	41.0	43.5	45.8	47.9	49.9	51.7	52.3	52.6	52.6	49.9	44.3	35.5	127.7
10000	-23.5	13.3	26.5	33.9	36.4	39.0	42.2	44.5	46.8	47.0	47.1	47.1	44.0	37.7	27.7	125.7
DR(A)	64.2	71.9	76.0	79.5	81.2	82.8	82.5	83.8	84.6	85.1	85.8	86.1	84.4	79.8	73.5	152.3
DR(L)	69.2	76.0	80.2	83.1	84.7	88.0	86.6	88.7	89.9	89.9	90.3	91.0	89.4	84.7	80.0	155.2
PWL	74.7	82.2	86.6	90.7	92.1	95.4	93.7	96.1	97.5	97.6	98.1	98.8	97.0	91.8	84.9	
PWLY	77.1	83.6	87.2	92.4	93.5	97.0	94.3	97.3	99.0	98.9	99.5	100.4	98.6	92.8	84.9	

66 RUN 009 1R-INCH O-FAN 52.6 DEGREE BLADE ANGLE 8895 RPM DATE 11/27/72 TIME 11-47-31  
 FULL-SCALE DIAMETER = 2.44 M ( 8.00 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

PFO. HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)															PWL RE 10**-13 WATTS
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	59.1	64.6	67.1	68.8	69.9	71.2	73.4	74.3	76.2	76.8	77.4	76.9	75.4	74.8	73.9	140.9
63	57.0	62.7	66.1	69.3	71.6	72.7	73.9	74.8	74.7	75.3	76.1	76.7	75.8	74.6	72.4	140.5
80	56.1	63.0	66.9	70.1	71.8	72.9	73.1	73.3	74.0	74.3	74.6	74.7	74.6	73.3	71.6	139.6
107	56.5	63.0	67.0	69.6	71.6	72.2	73.1	74.3	74.9	74.5	74.6	73.7	73.1	72.3	70.3	139.3
125	57.9	63.6	67.5	69.5	70.8	72.2	73.4	74.0	75.1	75.3	75.1	74.7	73.1	71.7	69.5	139.4
160	56.5	64.0	67.4	70.7	72.0	72.8	73.8	74.8	75.1	76.0	75.8	75.6	74.5	72.5	69.9	140.2
200	55.5	63.2	68.4	71.1	72.5	73.6	74.8	75.9	76.4	76.9	77.3	76.8	75.7	72.9	69.4	141.1
250	56.1	63.6	68.3	71.6	73.1	74.7	75.5	76.7	77.3	77.9	77.8	77.2	75.4	72.9	69.1	141.7
315	59.8	66.4	72.2	76.8	80.9	76.7	82.9	81.1	78.8	80.8	81.9	82.7	80.9	76.8	71.0	146.4
400	50.1	67.4	73.4	77.9	82.8	77.9	84.9	83.1	79.7	82.1	83.7	84.1	82.8	78.4	72.1	148.1
500	57.1	66.0	70.7	72.3	74.2	74.8	75.8	77.0	77.9	78.7	79.1	77.8	76.2	72.6	67.9	142.7
630	59.2	67.2	73.5	76.9	78.3	78.0	77.5	77.2	77.6	78.7	80.0	81.3	78.8	72.9	69.0	144.8
800	58.9	67.5	73.3	77.3	78.7	78.6	76.9	75.9	77.2	77.9	78.9	81.6	79.2	71.8	69.0	145.0
1000	54.1	63.6	68.2	72.5	74.3	74.0	75.3	76.2	76.6	77.4	79.3	78.5	76.0	71.5	67.0	142.8
1250	51.9	61.8	68.1	72.3	73.1	74.4	75.4	76.3	77.3	77.8	77.7	77.1	74.8	71.3	64.8	142.6
1600	49.1	60.5	66.7	71.0	71.9	72.3	74.0	74.5	75.6	77.5	76.5	76.1	72.6	69.0	62.4	141.7
2000	46.1	58.6	63.8	67.3	70.3	70.6	71.0	72.0	73.9	73.8	74.3	74.4	71.3	66.8	60.1	139.9
2500	41.1	55.7	61.1	64.6	67.2	69.3	68.6	69.1	71.5	72.1	73.8	72.1	69.7	64.8	57.9	138.7
3150	37.3	53.0	59.0	63.7	65.5	67.0	67.3	68.0	70.0	70.5	70.8	72.0	68.8	63.5	56.0	138.2
4000	30.0	48.2	55.8	60.2	62.2	63.8	64.9	65.2	66.4	67.7	68.1	68.8	65.9	61.2	52.5	136.6
5000	24.8	44.4	52.7	57.1	59.7	61.5	62.1	63.4	64.4	65.7	66.3	66.2	63.4	58.1	50.2	135.3
6300	14.0	37.4	46.5	52.0	54.6	56.8	57.7	59.2	60.6	61.7	62.2	61.5	58.9	53.2	45.3	133.0
8000	-0.7	27.6	39.3	44.7	48.8	51.0	52.4	54.0	55.4	56.7	56.9	56.0	53.3	47.7	39.3	130.8
10000	-20.3	15.4	30.4	36.3	42.1	44.4	46.3	48.1	49.5	51.0	50.8	49.7	46.8	41.1	31.6	128.7
DR(A)	64.4	73.2	78.9	82.7	84.9	84.3	85.9	85.7	86.0	87.0	87.8	88.1	85.8	81.1	75.9	153.4
DR(L)	59.4	76.9	82.1	85.7	88.4	87.2	89.9	89.4	89.2	90.2	91.0	91.3	89.5	85.9	82.2	156.0
PWL	74.0	83.3	89.2	93.2	96.3	95.3	98.1	97.8	97.8	98.9	99.5	99.6	97.7	93.4	87.7	
PWLT	74.0	83.3	89.2	94.3	97.4	96.4	99.2	98.4	97.8	98.9	100.0	100.3	98.5	94.0	87.7	



PUN 010 18-INCH C-FAN 47.1 DEGREE BLADE ANGLE 7642 RPM DATE 11/27/72 TIME 11-47-35

FULL-SCALE DIAMETER = 3.13 M ( 10.27 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FRQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 WATTS
50	52.2	58.4	62.3	65.3	67.3	68.9	69.8	70.5	70.6	70.5	70.3	70.4	70.3	70.0	68.1	135.7
63	51.9	57.9	62.3	65.3	66.8	67.9	68.6	69.2	69.6	70.0	69.1	68.6	68.5	67.5	65.8	134.4
80	51.3	58.4	63.0	65.9	67.3	68.6	68.8	69.7	69.8	70.2	70.1	69.1	68.3	67.7	65.5	134.8
100	52.5	59.3	63.0	65.4	67.0	67.8	69.1	69.7	70.3	71.0	70.8	69.8	68.8	67.4	65.5	135.1
125	54.1	60.8	64.0	65.7	66.9	68.8	69.5	70.2	71.6	71.2	71.0	69.7	68.2	65.5	135.8	
160	54.2	60.5	63.9	66.3	68.2	69.3	70.7	71.9	72.1	72.6	72.5	71.3	70.2	68.8	65.1	136.6
200	52.7	60.6	64.8	68.1	69.2	71.3	72.5	73.1	73.2	73.4	73.2	72.8	71.4	69.6	65.3	137.8
250	59.9	66.3	70.0	71.7	72.3	79.9	78.4	78.1	79.2	77.9	80.6	78.7	78.6	75.2	68.5	143.8
315	53.9	61.1	64.7	67.7	69.6	71.7	72.1	73.0	73.2	73.3	73.9	73.2	71.1	68.2	64.9	137.9
400	53.7	61.1	65.5	66.6	69.0	69.6	70.3	71.3	72.4	73.3	73.3	72.6	71.0	67.9	64.0	137.3
500	53.6	61.2	70.4	69.8	71.4	71.0	71.5	72.2	74.1	75.2	74.0	74.2	72.4	69.5	64.9	139.1
630	52.2	59.9	64.2	66.7	67.8	70.0	69.7	69.7	70.8	71.2	72.2	73.0	71.0	67.4	62.9	136.8
800	50.8	61.0	64.5	68.2	70.2	72.3	71.8	72.3	73.2	72.8	73.3	73.8	72.2	67.7	63.7	138.5
1000	49.2	62.1	64.9	66.5	69.2	70.2	71.5	73.0	72.8	73.2	73.0	73.2	71.2	69.8	63.2	138.5
1250	47.0	56.8	62.4	64.8	66.9	67.8	68.1	67.6	69.0	69.9	69.6	70.1	68.1	64.8	58.4	135.4
1600	44.5	55.8	61.9	63.5	66.3	66.4	65.5	65.9	67.6	68.9	68.8	70.4	68.8	64.8	57.1	135.2
2000	43.6	53.0	59.4	61.4	63.1	63.5	63.3	64.3	65.3	66.8	67.3	67.5	66.1	62.1	55.4	133.5
2500	37.5	50.6	56.6	60.1	61.7	62.6	62.5	63.5	64.2	66.0	66.2	66.1	64.4	61.3	53.9	133.0
3150	31.5	46.7	53.1	56.1	58.5	60.5	59.5	60.6	61.5	63.4	64.3	63.3	61.5	58.6	50.8	131.3
4000	23.9	41.3	48.6	52.0	54.5	56.6	56.5	57.6	58.5	59.6	60.0	60.9	58.8	54.5	46.6	129.4
5000	17.9	36.2	44.3	47.9	50.7	52.7	52.8	53.9	54.8	56.1	56.8	57.2	55.0	50.6	43.3	127.1
6300	7.1	29.2	39.4	42.6	45.2	48.4	48.3	50.0	51.2	52.0	52.6	52.6	50.5	46.1	38.4	125.2
8000	-7.3	20.5	33.5	36.5	39.0	43.5	43.3	45.6	47.1	47.4	47.9	47.4	45.3	40.8	32.5	123.4
10000	-26.4	9.5	26.1	29.3	32.1	38.0	37.7	40.6	42.5	42.2	42.6	41.6	39.4	34.4	25.1	121.6

DB(A) 59.2 68.4 73.4 75.2 77.2 79.0 78.9 79.5 80.4 80.8 81.1 81.2 79.6 76.4 71.0 148.6

DB(L) 65.5 72.9 77.5 79.4 81.0 83.9 83.7 84.2 85.0 85.0 85.7 85.1 83.9 81.3 77.1 151.2

PN 59.9 78.7 84.6 86.1 88.2 91.2 90.8 91.2 92.2 92.3 93.3 94.5 93.6 92.7 89.5 82.8

PNLT 71.0 79.8 86.2 87.1 89.2 92.7 91.8 92.3 93.2 93.3 94.5 93.6 92.7 89.5 82.8

RUN 011 18-INCH Q-FAN 47.1 DEGREE BLADE ANGLE 8874 RPM

DATE 11/27/72

TIME 11-47-38

FULL-SCALE DIAMETER = 2.68 M ( 8.79 FT) , FULL-SCALE THRUST = 66723. N ( 15000. LB)

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)															PML RE 10**-13 WATTS	
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150		
50	55.9	61.9	65.7	68.4	70.5	71.0	72.8	73.9	73.0	73.4	73.8	74.2	74.7	73.1	71.2	139.0	
63	54.3	60.6	65.2	68.6	70.0	71.0	71.7	72.2	72.5	72.9	72.2	72.5	73.0	71.9	70.2	137.9	
80	54.2	61.3	66.2	67.9	69.4	70.7	71.7	72.3	72.8	73.6	72.4	71.7	71.1	70.4	68.4	137.5	
100	55.8	62.3	65.4	68.4	69.1	70.7	71.2	72.6	73.3	73.6	73.4	73.0	71.4	70.4	68.9	137.8	
125	56.2	62.2	65.8	67.5	70.1	70.7	71.7	73.3	73.9	74.1	74.2	74.2	72.9	70.5	68.6	138.5	
160	54.5	61.8	66.0	69.3	70.6	71.6	72.7	73.6	74.4	75.1	74.9	74.4	73.4	71.0	67.7	139.0	
200	53.3	62.0	67.0	69.4	71.3	72.9	73.8	74.7	75.7	75.7	75.6	74.9	73.8	71.4	67.5	139.8	
250	56.4	64.4	67.9	71.2	74.5	75.4	77.1	77.2	76.6	76.5	78.1	78.9	77.3	77.2	67.9	142.6	
315	57.3	65.5	69.5	71.3	75.7	76.3	78.5	78.0	77.6	77.5	79.5	80.0	78.9	78.6	68.5	143.9	
400	55.4	63.6	67.7	69.5	71.6	72.9	74.0	74.9	75.1	75.9	76.5	75.4	74.1	70.5	66.2	140.2	
500	57.2	63.5	69.0	70.6	71.8	72.9	73.6	74.1	75.5	75.9	76.6	76.9	73.8	71.4	66.2	140.6	
630	55.1	63.8	68.6	70.8	72.0	72.6	73.4	73.8	74.4	75.3	75.9	76.1	74.0	71.0	66.4	140.4	
800	53.0	63.2	69.1	71.1	74.5	74.2	74.7	75.6	76.3	76.6	76.2	76.4	73.4	70.1	64.6	141.3	
1000	52.8	62.7	67.4	70.6	72.2	73.6	74.7	75.6	76.3	76.6	76.2	76.4	73.4	70.1	64.6	141.3	
1250	51.2	61.2	66.3	69.2	70.2	70.8	72.1	72.2	73.2	73.5	74.3	75.8	71.7	67.7	61.6	139.6	
1600	47.0	58.5	63.3	66.9	67.8	69.1	69.9	69.6	71.2	71.6	72.9	73.8	71.0	65.9	60.1	138.2	
2000	42.8	55.1	61.8	64.8	66.1	66.9	67.8	67.8	68.4	69.5	70.0	71.9	68.6	64.1	57.6	136.5	
2500	39.9	53.8	60.0	62.7	65.3	65.9	66.3	66.4	67.5	68.9	69.6	69.4	68.0	63.4	56.5	136.2	
3150	33.7	48.5	55.9	59.2	61.2	63.0	63.4	64.2	65.4	66.2	66.9	67.0	65.0	61.2	52.9	134.5	
4000	26.5	44.7	51.6	55.6	57.6	59.8	60.3	61.4	62.1	63.9	64.1	64.1	62.1	56.9	49.8	132.9	
5000	20.0	39.7	47.6	51.5	53.8	56.4	57.2	58.1	59.3	60.3	60.7	60.4	58.6	53.7	46.1	130.7	
6300	10.2	32.8	42.1	46.2	48.6	51.5	52.7	53.6	54.8	56.4	56.9	56.7	54.6	49.2	41.6	129.1	
8000	-3.1	24.4	35.4	40.1	42.8	46.2	47.9	48.7	50.0	52.1	52.8	52.6	50.0	43.9	35.9	127.5	
10000	-21.3	13.6	27.3	33.0	36.1	40.1	42.4	43.3	44.6	47.3	48.0	47.7	44.5	37.6	28.8	125.9	

DR(A) 61.6 70.7 75.8 78.4 80.3 81.1 82.1 82.4 83.1 83.5 84.1 84.6 82.1 79.3 73.1 150.6

DR(L) 67.1 74.8 79.4 81.9 84.1 84.9 86.1 86.5 86.9 87.3 87.8 88.1 86.4 84.7 79.7 153.5

PNL 71.4 80.7 86.1 89.0 91.2 92.2 93.4 93.6 94.3 95.1 95.8 96.0 94.0 91.6 84.4

PNUT 71.4 80.7 86.1 89.0 91.2 92.2 93.9 93.6 94.3 95.1 95.8 96.0 94.5 92.5 84.4

RUN 012 18-INCH O-FAN 62.5 DEGREE BLADE ANGLE 6136 RPM DATE 11/27/72 TIME 11-47-41

FULL-SCALE DIAMETER = 3.28 M ( 10.77 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FRF2 HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT )																PWL RE 10**-13 WATTS
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150		
50	53.6	59.4	63.5	66.7	67.9	68.8	69.2	70.9	71.1	70.9	71.0	70.8	69.9	68.4	66.5		135.7
63	54.3	60.3	65.0	67.2	69.2	70.5	70.7	71.1	72.1	71.6	72.0	71.5	70.7	69.2	66.5		136.6
80	55.2	62.1	65.9	67.9	68.7	70.0	71.0	71.1	72.2	72.4	72.7	72.3	71.2	69.7	66.4		137.0
100	56.6	63.0	66.6	68.3	69.9	71.0	71.2	72.1	73.2	73.1	73.0	73.3	71.9	70.1	66.6		137.7
125	57.5	64.0	68.1	70.1	71.4	72.2	72.2	73.6	74.2	75.6	76.5	75.9	75.2	72.8	67.9		139.9
160	60.1	69.4	77.3	76.8	78.3	83.7	78.1	82.8	76.5	86.5	86.4	88.2	88.3	85.8	77.3		150.6
200	56.9	63.8	67.5	70.2	71.8	72.7	73.1	73.8	74.5	74.8	75.4	75.4	74.3	71.5	66.8		139.6
250	57.4	64.4	67.9	70.5	72.6	73.2	73.4	73.5	74.6	75.3	75.9	76.4	75.1	71.2	65.9		140.1
315	59.6	67.8	72.8	75.6	77.2	74.3	73.4	74.0	75.1	77.0	78.1	78.1	75.7	72.4	67.3		142.3
400	57.2	63.9	67.7	70.1	71.7	72.3	72.5	72.7	73.9	73.9	75.5	76.1	74.2	70.4	64.5		139.6
500	61.3	66.4	68.9	69.5	72.9	73.5	72.5	73.4	73.4	74.2	75.0	75.2	73.6	69.8	63.9		139.9
630	57.0	63.1	68.7	72.7	72.3	72.2	71.9	73.4	73.5	74.2	75.9	76.0	74.0	69.2	63.2		140.1
800	54.9	62.8	68.7	71.7	72.4	70.9	70.7	70.6	72.0	72.6	72.9	75.4	72.2	68.5	62.0		139.1
1000	52.8	61.7	65.9	67.9	69.9	70.6	69.9	68.8	70.5	71.6	71.9	73.6	71.9	67.4	60.1		137.8
1250	50.4	60.5	64.6	66.8	67.6	68.0	68.1	67.8	68.2	69.1	70.6	70.8	69.6	65.8	58.8		136.3
1600	48.7	58.3	63.8	65.6	67.5	67.4	66.8	66.3	66.9	68.1	68.8	68.9	68.2	63.8	56.0		135.5
2000	45.9	57.6	62.4	64.6	65.6	66.7	65.6	65.1	65.9	66.3	67.3	68.2	66.6	62.9	54.9		135.0
2500	41.6	54.3	60.0	62.2	63.8	63.9	63.1	62.8	63.5	64.6	64.8	65.4	64.8	60.2	52.0		133.6
3150	36.8	50.9	57.1	59.9	61.7	61.7	60.8	59.9	60.6	61.9	62.6	63.4	61.9	57.4	49.9		132.5
4000	29.3	46.2	52.9	55.9	57.4	58.0	57.4	57.5	57.7	58.5	58.9	60.3	58.7	53.7	45.4		130.8
5000	23.8	41.7	49.0	52.6	53.9	53.9	53.5	53.1	53.8	54.3	55.5	56.9	55.2	50.8	42.0		128.9
6300	14.2	35.2	43.9	48.3	49.6	49.1	49.0	48.2	49.4	49.6	51.5	52.8	50.9	46.9	37.4		127.0
8000	1.3	27.2	37.8	43.4	44.9	43.9	44.2	43.0	44.7	44.6	47.2	48.3	46.2	42.4	31.8		125.1
10000	-16.3	17.1	30.5	37.6	39.5	38.3	39.0	37.4	39.7	39.2	42.5	43.4	40.8	37.0	25.0		123.2
DB(A)	62.5	71.2	76.0	78.4	79.7	79.9	79.1	79.5	79.9	81.4	82.2	83.1	81.6	78.0	71.1		151.5
DB(L)	69.0	76.3	81.7	83.3	84.7	86.6	84.5	86.4	85.3	89.0	89.3	90.5	90.0	87.2	80.2		154.4
PWL	74.1	82.1	87.6	89.9	91.5	92.7	90.6	92.2	91.4	94.7	95.1	96.2	95.3	92.0	84.6		
PWLI	75.5	83.0	89.2	91.0	92.6	94.6	91.6	93.8	91.4	96.5	96.9	98.3	97.6	94.3	86.3		

RUN 013 18-INCH Q-FAN 62.5 DEGREE BLADE ANGLE 7391 RPM

DATE 11/27/72 TIME 11-47-44

FULL-SCALE DIAMETER = 2.75 M ( 9.03 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)										PWL RE 10**-13 WATTS					
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	58.8	64.3	68.0	70.4	72.2	73.3	74.7	75.4	76.0	75.9	76.2	76.0	75.7	74.7	72.2	140.8
63	56.3	62.8	67.1	70.2	71.2	72.5	73.5	74.1	74.5	74.9	74.7	74.5	73.2	72.7	71.1	139.4
80	57.0	64.3	68.4	70.6	72.2	72.4	74.2	74.9	75.5	75.9	75.5	74.2	73.9	72.1	69.9	139.9
100	58.1	64.7	68.1	70.8	72.4	73.4	74.6	75.4	75.7	76.1	75.9	75.7	74.7	72.6	69.9	140.4
125	59.4	65.4	69.3	71.3	73.1	73.9	75.4	75.5	76.5	76.8	77.4	76.7	75.3	73.1	69.8	141.2
160	59.1	66.1	69.8	72.7	74.1	74.4	76.1	76.3	77.4	77.8	77.9	77.7	76.3	73.5	69.8	142.0
200	59.6	66.3	70.2	73.5	74.5	75.8	76.9	78.8	78.9	79.5	80.6	79.1	77.7	75.0	70.7	143.6
250	52.8	70.6	72.6	75.9	78.2	79.8	79.3	86.2	83.6	85.2	87.0	85.1	82.7	79.4	77.8	149.1
315	60.0	67.2	71.1	73.4	75.5	75.8	76.5	77.2	77.8	78.9	79.5	78.6	77.2	73.1	68.6	143.1
400	59.4	67.3	72.4	73.0	75.1	76.5	76.4	77.9	78.3	78.7	79.7	79.0	77.1	73.3	67.4	143.4
500	59.7	69.6	76.0	75.2	75.3	81.6	79.2	83.6	80.3	79.1	83.7	81.1	78.8	75.7	69.3	146.5
630	57.9	68.8	71.1	75.1	75.4	75.9	76.1	76.3	77.7	77.6	78.8	79.4	76.9	72.8	67.6	143.4
800	56.5	67.6	70.4	74.6	75.3	75.5	76.2	75.7	76.8	77.5	78.0	78.5	76.6	71.9	66.6	143.0
1000	56.1	66.2	70.4	74.7	74.5	75.2	77.7	76.4	77.3	79.6	79.2	78.2	75.7	72.2	64.9	143.6
1250	57.5	64.5	68.6	71.2	72.9	73.1	73.6	74.4	75.0	76.1	75.9	76.6	74.9	70.0	62.6	141.6
1600	51.5	62.5	66.4	69.4	71.3	71.6	72.3	71.7	73.4	74.7	74.8	74.6	73.6	67.9	60.6	140.4
2000	48.6	61.0	64.7	68.2	70.4	71.5	70.3	70.1	71.0	71.8	73.1	73.8	71.1	66.5	58.7	139.5
2500	45.6	58.0	63.9	67.3	68.7	69.6	69.5	69.6	70.2	71.1	71.5	71.6	69.4	64.8	57.4	138.9
3150	40.4	54.6	60.9	64.1	66.6	67.1	66.9	66.9	67.6	68.6	69.6	69.4	67.4	62.1	54.4	137.6
4000	34.1	50.8	57.3	61.7	63.5	64.1	63.9	64.3	65.0	65.8	66.4	66.6	65.0	59.2	51.3	136.3
5000	28.9	47.5	54.5	58.6	60.5	61.4	61.3	60.7	61.7	62.5	63.5	63.9	61.7	55.9	48.3	134.6
6300	18.4	41.1	49.5	53.8	56.0	56.9	57.4	57.0	58.3	58.5	59.2	59.6	57.7	51.8	44.0	133.1
8000	4.4	32.9	43.4	48.2	50.9	51.9	52.9	53.0	54.4	54.2	54.3	54.8	53.1	46.9	38.6	131.5
10000	-14.4	22.5	35.8	41.6	45.0	46.2	47.8	48.3	50.0	49.2	48.8	49.3	47.7	41.0	31.7	129.9

DB(A) 65.5 75.0 79.2 82.0 83.0 84.5 84.6 86.0 85.6 86.5 87.6 87.0 84.9 80.8 75.3 153.6

DB(L) 70.8 78.9 82.9 85.3 86.6 88.2 88.4 90.9 90.1 90.9 92.2 91.1 89.2 86.0 82.6 156.5

PWL 75.4 85.5 90.7 93.2 94.8 96.5 96.0 98.2 97.6 98.6 99.7 98.9 96.8 92.9 88.5

PWLT 76.6 86.2 92.1 93.2 95.3 98.3 96.0 100.1 98.5 99.6 101.0 99.9 97.7 93.8 89.9

PUN 016 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7796 RPM DATE 11/27/72 TIME 11-47-48

FULL-SCALE DIAMETER = 2.75 M ( 9.03 FT) , FULL-SCALE THRUST = 66723. N ( 15000. LB)

FRQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**13 WATTS
50	57.1	63.1	66.5	68.9	71.2	72.3	73.7	74.4	74.5	74.9	75.5	74.8	74.4	73.4	71.2	139.7
63	57.1	63.1	66.4	70.4	71.2	71.5	73.2	73.1	73.7	73.9	74.5	74.0	72.4	72.4	70.1	138.9
80	57.7	63.8	67.1	69.3	71.2	71.7	72.5	73.1	74.2	74.6	75.0	73.2	72.7	71.8	69.6	138.9
100	57.9	64.0	67.4	69.1	70.7	71.4	73.1	73.1	74.5	74.9	75.1	73.7	72.4	71.8	69.6	139.0
125	57.9	64.1	67.5	69.3	71.1	72.4	73.6	74.3	74.5	75.5	75.1	74.7	73.8	71.8	69.5	139.6
160	58.6	64.9	68.3	70.2	72.3	73.4	73.9	75.0	75.9	77.3	75.9	75.7	74.3	71.7	69.5	140.5
200	58.6	65.0	68.4	71.0	73.8	74.3	76.4	77.0	78.1	80.5	78.1	76.8	75.1	73.7	71.4	142.3
250	53.6	70.2	73.7	77.9	85.5	81.6	87.8	87.8	91.1	95.3	90.3	88.6	86.2	85.1	82.9	154.6
315	59.3	66.0	69.6	71.4	74.0	75.1	76.0	77.2	77.9	80.4	78.0	77.1	75.5	72.4	70.1	142.5
400	59.0	65.8	69.5	70.5	73.1	74.5	75.8	75.9	76.3	78.7	77.5	76.7	74.9	71.3	69.0	141.7
500	64.7	71.8	75.5	73.4	75.0	76.5	76.9	76.8	78.5	80.8	81.9	81.2	77.0	73.7	71.3	144.9
630	57.9	65.4	69.2	70.1	73.0	73.9	74.4	74.6	75.8	77.3	76.9	76.1	74.8	71.8	69.4	141.4
800	60.1	68.0	71.9	72.1	76.1	77.3	77.8	76.7	77.7	79.0	78.6	77.0	74.3	71.1	68.6	143.4
1000	59.9	68.3	72.4	71.3	73.2	74.7	76.0	77.0	76.8	78.2	77.0	76.4	74.5	71.5	68.9	142.8
1250	55.5	64.6	68.9	69.6	72.1	73.2	73.5	74.9	74.6	75.9	75.0	77.2	72.6	68.8	66.1	141.3
1600	50.6	60.6	65.2	68.0	70.2	71.2	71.5	71.8	73.5	74.0	74.5	74.7	71.9	67.8	65.0	139.9
2000	47.0	58.1	63.1	65.3	67.5	68.9	68.4	69.7	70.6	71.9	71.4	71.6	69.7	67.6	64.6	138.2
2500	44.2	56.6	62.0	64.5	66.6	67.8	68.2	68.7	69.1	70.7	70.7	70.8	68.4	63.5	60.2	137.7
3150	38.3	52.5	58.5	61.8	63.8	64.8	65.6	66.3	67.0	68.6	67.6	68.6	65.6	62.3	58.8	136.3
4000	31.1	47.8	54.6	58.0	60.5	62.6	62.4	63.2	64.1	66.2	65.4	65.1	62.7	65.7	61.8	136.2
5000	25.2	43.3	50.6	53.9	57.0	58.5	58.8	60.2	60.6	62.4	61.8	61.7	59.0	59.7	55.6	133.2
6300	14.7	36.3	44.7	48.4	51.6	53.5	54.7	56.1	56.6	58.4	57.4	57.2	54.3	57.2	52.5	132.0
8000	0.7	27.7	37.8	42.1	45.6	48.0	50.2	51.5	52.2	53.9	52.6	52.2	49.0	53.9	48.4	130.8
10000	-18.1	16.8	29.5	34.8	38.8	41.8	45.0	46.4	47.2	48.9	47.1	46.5	42.9	49.6	42.9	129.6
DB(A)	57.1	75.0	79.1	79.6	83.0	83.4	84.9	85.2	86.7	89.4	87.2	86.6	83.9	81.4	78.8	154.8
DB(L)	71.6	78.6	82.4	83.8	88.2	87.3	90.4	90.5	92.8	96.3	92.8	91.5	89.2	87.6	85.3	157.6
PWL	77.1	85.4	89.7	91.1	95.6	94.9	97.8	98.1	100.0	102.9	100.2	99.3	96.9	95.3	92.5	
PWLT	79.1	87.5	91.8	92.3	97.6	96.0	99.7	99.9	102.2	105.4	102.3	101.2	98.7	97.3	94.6	

RUN 017 18-INCH Q-FAN 57.4 DEGREE BLADE ANGLE 7796 RPM

DATE 11/27/72

TIME 11-47-51

FULL-SCALE DIAMETER = 2.71 M ( 8.88 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FRQ.	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE
HZ																10**-13 WATTS
50	57.0	63.0	66.3	68.5	70.8	72.6	73.5	74.5	74.6	74.8	75.3	74.3	74.8	73.5	71.3	139.6
63	55.4	61.5	64.8	67.0	71.0	71.6	73.3	73.2	73.4	74.2	73.3	74.3	73.0	72.0	69.8	138.6
80	55.8	61.9	65.3	67.5	71.0	72.1	72.5	73.7	73.9	74.4	73.5	72.8	72.2	71.2	69.0	138.4
100	56.9	63.1	66.4	68.7	70.5	71.8	72.5	73.7	73.8	74.7	74.0	73.6	72.5	71.2	68.9	138.6
125	57.6	63.8	67.2	69.4	71.2	72.3	73.5	74.2	74.3	75.2	75.0	75.1	73.7	71.6	69.4	139.5
160	56.6	62.9	66.3	68.6	72.4	72.7	74.0	74.9	75.0	76.2	76.0	75.2	74.4	72.4	70.1	140.1
200	56.7	63.1	66.6	68.8	73.9	74.5	75.9	75.8	76.0	78.3	77.9	77.0	75.6	73.8	71.6	141.6
250	65.0	71.5	75.0	77.3	85.9	81.0	87.4	85.1	85.2	91.3	90.7	88.2	87.6	86.0	83.7	153.1
315	59.4	66.1	69.6	71.9	74.5	75.1	76.2	76.3	76.4	78.3	78.2	77.4	75.8	73.2	70.9	142.2
400	58.5	65.4	69.0	71.3	73.8	74.1	75.1	75.0	75.2	76.7	77.6	76.6	75.0	72.1	69.8	141.3
500	63.8	71.0	74.7	77.1	75.7	75.8	76.6	76.5	76.6	78.7	81.3	81.3	76.7	74.6	72.2	144.6
630	55.8	63.2	67.0	69.5	73.1	73.8	74.2	74.5	74.6	75.7	76.7	76.5	75.1	71.7	69.2	141.0
800	56.6	64.5	68.5	71.0	78.2	77.2	78.4	76.1	76.2	77.6	79.4	76.7	75.2	71.5	69.0	143.2
1000	53.7	62.1	66.3	68.8	73.6	74.1	75.6	76.0	76.2	76.0	74.8	75.7	72.0	69.0	66.3	139.9
1250	52.1	61.2	65.5	68.2	71.8	71.7	72.0	72.8	72.9	74.0	74.8	75.7	72.0	69.0	66.3	139.3
1600	48.8	58.7	63.4	66.2	69.8	70.4	71.4	71.7	71.8	72.4	74.7	74.4	71.3	68.4	65.6	137.4
2000	45.9	56.9	61.9	64.9	67.9	68.7	68.6	69.1	69.3	70.3	71.1	70.9	69.4	65.6	62.6	137.3
2500	42.8	55.2	60.6	63.8	66.9	67.3	67.7	68.1	68.2	69.6	70.5	70.8	68.2	64.6	61.4	135.8
3150	36.9	51.2	57.2	60.7	63.7	64.5	65.1	65.5	65.7	67.2	68.1	68.0	66.5	61.9	58.4	134.4
4000	29.9	46.6	53.5	57.3	60.5	61.5	62.7	62.8	63.0	64.1	65.7	65.2	63.3	58.8	55.0	132.0
5000	23.2	41.3	48.6	52.7	56.6	57.8	59.1	58.8	59.0	61.1	62.1	61.5	59.3	55.5	51.4	130.0
6300	13.0	34.7	43.1	47.7	51.7	53.1	55.1	54.5	54.7	56.8	58.1	56.9	54.7	50.0	45.4	128.0
8000	-0.6	26.3	36.5	42.0	46.1	47.7	50.5	49.7	49.9	52.0	53.5	51.6	49.4	43.8	38.3	126.0
10000	-19.1	15.7	28.4	35.2	39.7	41.8	45.4	44.4	44.7	46.7	48.4	45.8	43.3	36.5	29.7	126.0

DR(A) 65.2 72.0 76.8 79.4 83.6 82.8 84.7 84.0 84.1 86.6 87.3 86.3 84.2 81.7 79.2 153.9

DB(L) 70.7 77.6 81.2 83.6 88.6 86.9 90.1 89.0 89.2 93.0 92.9 91.3 90.0 88.1 85.8 156.7

PWL 75.7 84.1 88.4 91.1 95.9 94.4 97.5 96.6 96.8 100.2 100.4 99.0 97.5 95.1 92.5

PWLT 78.0 86.3 90.6 93.3 97.9 95.4 99.4 98.1 98.3 102.3 102.5 100.8 99.5 97.2 94.6

PIN 018 1A-INCH O-FAN 47.1 DEGREE BLADE ANGLE 10330 RPM DATE 11/27/72 TIME 11-47-55

FULL-SCALE DIAMETER = 2.32 M ( 7.62 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT )																PWL RE 10**13 WATTS
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150		
50	58.6	64.7	67.2	68.9	70.7	72.0	74.5	75.6	76.8	77.1	77.7	77.8	76.4	75.7	75.0	141.8	
63	58.1	63.8	67.2	69.7	72.2	73.3	74.5	74.9	75.3	75.9	77.0	76.8	76.4	74.7	72.7	141.1	
80	57.0	63.6	68.1	71.4	72.7	73.3	73.5	74.4	74.5	75.4	75.7	76.0	75.7	74.2	72.1	140.6	
100	58.1	65.0	68.6	71.8	72.9	74.0	74.5	74.9	75.0	75.6	74.5	74.5	74.7	73.8	72.1	140.5	
125	57.8	65.0	68.4	70.6	72.2	73.2	73.7	74.6	75.2	75.9	76.0	74.9	73.7	72.8	71.1	140.3	
160	57.1	64.4	68.8	71.6	72.6	73.7	74.6	75.5	75.7	76.3	76.4	76.4	75.1	73.6	70.3	141.0	
200	56.1	64.3	68.5	71.2	72.8	74.7	74.9	76.0	76.6	77.0	76.9	76.7	75.1	73.5	70.0	141.3	
250	57.2	64.4	68.7	71.9	73.7	74.8	75.1	76.8	76.9	77.5	77.4	76.8	75.5	72.9	70.2	141.8	
315	58.8	65.7	68.6	71.9	74.2	76.1	76.8	77.4	77.9	78.2	78.0	77.3	75.7	73.1	69.6	142.5	
400	64.4	74.8	75.6	78.3	78.4	81.0	83.7	79.9	83.3	80.7	80.4	83.7	82.4	82.0	70.9	148.0	
500	56.6	65.8	69.8	72.1	74.3	75.6	77.1	77.1	77.9	78.8	78.6	77.6	76.0	73.6	68.5	142.9	
630	56.3	63.7	68.5	71.7	73.6	75.0	75.7	76.7	77.1	78.0	79.0	77.8	75.1	72.7	68.0	142.5	
800	57.1	65.3	69.3	73.3	75.0	76.8	80.4	77.0	81.2	80.8	79.4	79.6	76.5	72.8	68.5	144.7	
1000	53.4	63.3	67.4	70.7	72.8	74.2	75.2	75.7	76.8	76.9	77.2	77.2	74.8	71.2	66.4	142.0	
1250	52.6	63.9	67.7	71.9	74.7	75.9	75.6	77.2	77.9	78.5	78.8	76.9	74.7	72.2	65.5	143.3	
1600	50.1	60.8	65.5	70.3	72.2	73.2	74.8	76.5	76.6	77.0	76.8	76.2	72.9	69.0	62.7	142.1	
2000	46.5	57.8	63.3	67.0	69.3	71.8	71.5	72.5	73.8	75.0	75.0	74.3	70.8	67.0	60.5	140.3	
2500	41.9	55.6	60.5	64.7	67.0	68.7	69.1	70.3	71.0	72.1	72.3	72.2	70.0	65.4	58.2	138.6	
3150	37.2	52.9	59.4	62.9	65.7	66.9	67.4	68.4	70.1	71.2	71.9	71.4	69.2	64.4	56.6	138.5	
4000	29.7	48.2	55.7	59.6	62.6	64.5	65.1	66.1	67.0	68.1	69.1	69.0	66.1	61.4	53.7	137.1	
5000	24.7	44.3	52.1	57.0	59.6	61.5	62.4	63.5	65.2	66.2	66.4	66.5	63.8	59.2	50.6	135.7	
6300	13.7	37.1	45.7	51.4	55.1	56.5	57.4	58.9	60.6	61.6	62.4	62.2	59.3	54.2	45.5	133.3	
8000	-1.0	27.5	37.8	44.3	48.7	50.4	51.8	53.3	55.1	56.3	56.8	56.7	53.5	47.6	38.6	130.8	
10000	-20.6	15.4	28.3	36.1	41.3	43.5	45.4	47.1	48.9	50.4	50.4	50.4	46.7	39.9	30.1	128.3	

DB(A) 64.5 74.1 77.4 80.9 82.7 84.4 85.9 85.6 87.1 87.3 87.2 87.0 84.6 82.1 75.7 153.4

DB(L) 70.0 78.6 81.5 84.5 86.1 87.7 89.2 88.8 90.2 90.2 90.1 90.2 88.6 86.9 82.6 155.9

PWL 75.7 86.1 89.3 92.7 94.2 96.1 97.7 97.5 98.7 98.9 99.0 99.1 97.1 95.0 87.6

PWLT 76.8 87.6 90.4 93.7 94.9 97.0 99.3 97.5 100.1 100.0 99.0 100.1 98.2 96.4 87.6

P/N 019 18-INCH Q-FAN 62.5 DEG/REE BLADE ANGLE 8600 RPM DATE 11/27/72 TIME 11-47-59

FULL-SCALE DIAMETER = 2.45 M ( 8.04 FT) , FULL-SCALE F THRUST = 66723. N ( 15000. LB)

FREQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 WATTS
	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)															
50	61.6	67.8	71.0	71.7	72.9	75.3	77.2	78.4	79.7	80.6	80.5	79.8	77.9	77.9	77.0	144.2
63	62.0	67.6	70.1	72.3	74.7	76.3	77.5	78.1	79.2	78.9	78.0	77.5	77.4	76.3	75.4	143.3
80	59.5	65.7	69.4	71.8	73.7	75.2	76.0	76.1	77.0	77.6	77.2	76.7	77.2	75.8	74.4	142.2
100	59.4	66.2	70.4	72.1	74.1	75.2	76.4	76.9	77.7	77.9	77.9	76.2	76.1	74.8	73.1	142.2
125	59.9	66.6	70.8	73.1	74.8	75.7	76.1	77.0	78.2	78.8	78.1	77.7	76.6	75.1	72.5	142.7
160	60.6	67.0	71.8	73.7	75.3	75.4	76.9	78.3	78.4	79.0	79.4	79.2	77.6	75.0	72.5	143.5
200	59.6	67.3	71.2	73.7	74.2	75.6	77.1	78.0	79.1	79.8	79.4	78.8	77.2	75.2	71.2	143.5
250	58.8	66.6	70.6	73.9	74.7	76.3	77.5	78.4	79.1	79.9	79.8	79.1	77.5	74.6	70.1	143.7
315	64.8	69.0	73.7	78.3	77.1	81.0	84.0	80.9	85.5	86.9	86.3	83.5	82.6	77.5	70.7	149.0
400	52.4	68.3	72.4	75.7	76.0	78.6	80.9	79.3	82.3	83.6	82.7	81.4	79.8	75.2	69.4	146.3
500	58.6	67.2	71.7	73.6	75.2	76.6	77.1	78.2	78.7	79.7	79.8	79.1	77.2	73.1	67.4	143.8
630	60.7	68.9	72.2	76.4	76.3	78.4	79.0	78.4	79.6	80.1	82.5	83.2	78.8	73.4	69.0	145.8
800	57.6	66.0	70.2	73.4	74.6	76.3	76.9	77.5	78.2	78.5	79.9	80.1	77.6	71.9	67.2	143.9
1000	55.9	65.3	70.6	73.7	75.2	77.9	78.2	78.9	78.8	79.2	79.4	79.9	77.4	72.0	65.4	144.5
1250	54.6	64.4	69.0	71.4	73.7	75.5	76.6	77.5	77.9	77.7	78.3	78.3	75.5	71.4	64.2	143.3
1600	52.4	63.4	68.5	71.3	72.9	74.5	75.0	75.5	76.7	76.8	77.5	76.5	74.2	69.5	62.2	142.6
2000	49.1	60.1	66.4	69.6	70.9	72.4	73.3	74.1	74.4	75.1	76.1	75.2	72.9	67.9	60.1	141.4
2500	45.3	58.4	64.3	67.0	69.1	70.8	71.3	71.8	71.9	73.3	74.0	74.3	71.6	65.8	58.1	140.4
3150	41.1	56.3	63.1	65.8	67.9	69.9	70.4	70.9	71.6	72.4	73.1	72.9	70.4	64.3	56.3	140.3
4000	35.3	52.5	59.8	63.2	65.7	67.3	67.8	68.6	68.8	69.4	69.8	70.0	67.7	61.4	53.0	138.9
5000	30.6	49.0	57.0	60.9	63.5	64.9	65.3	66.2	66.7	67.7	68.3	67.9	65.7	59.4	50.8	137.9
6300	21.5	42.8	52.1	56.2	58.6	60.0	61.2	62.1	62.6	63.6	64.2	63.7	61.3	55.2	45.6	135.8
8000	7.9	34.8	45.3	50.0	52.7	55.4	56.7	57.2	57.8	59.2	59.2	58.6	55.7	49.0	39.3	133.9
10000	-10.7	24.4	36.9	42.6	45.7	49.9	51.5	51.6	52.2	54.1	53.5	52.6	49.0	41.6	31.4	132.1
DB(A)	66.2	74.6	79.3	82.5	83.6	85.6	86.6	86.7	87.8	88.5	89.0	88.7	86.2	81.2	75.3	155.4
DB(L)	72.3	79.1	83.3	86.3	87.2	89.2	90.6	90.5	92.0	92.8	92.8	92.1	90.3	87.0	83.8	157.5
PWL	77.0	85.6	90.9	94.0	95.5	97.4	98.7	98.7	100.1	101.1	101.1	100.5	98.2	93.5	87.4	
PWLT	77.7	85.6	90.9	94.6	95.5	98.0	99.5	98.7	101.0	101.9	102.0	101.7	98.9	93.5	87.4	



RUN 020 18-INCH Q-FAN 62.5 DEGREE BLADE ANGLE 8960 RPM

DATE 11/27/72 TIME 11-48-02

FULL-SCALE DIAMETER = 2.30 M ( 7.55 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LR )

FREQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 WATTS
50	62.3	67.8	70.4	72.1	73.6	75.4	77.4	78.8	80.0	81.0	81.4	80.7	79.6	79.6	79.4	145.2
63	62.2	67.5	71.9	74.1	74.6	76.7	77.9	79.3	79.5	79.3	79.4	79.2	79.1	77.8	76.4	144.3
80	59.9	66.5	70.4	72.8	74.3	75.9	76.1	77.0	77.7	78.0	78.1	77.7	77.6	76.8	74.6	142.9
100	60.5	67.2	70.8	73.3	75.1	75.7	76.4	77.3	77.9	78.0	77.1	75.9	76.8	76.3	73.8	142.6
125	61.4	67.4	71.8	73.5	75.1	76.2	76.6	77.5	78.4	78.8	78.9	78.2	77.1	75.2	73.0	143.2
160	61.2	68.3	71.9	74.0	75.7	77.1	77.8	78.5	78.9	79.3	79.3	79.1	78.2	75.5	72.4	143.9
200	60.3	67.7	72.2	74.1	76.0	76.6	77.5	78.7	79.6	80.4	80.0	80.1	78.2	75.6	71.9	144.2
250	59.3	66.6	71.6	73.4	75.4	77.0	77.5	78.7	79.8	80.4	80.5	79.7	78.1	74.9	71.6	144.2
315	62.0	70.4	76.2	77.8	77.4	77.2	79.7	80.1	81.5	83.1	85.7	83.7	80.6	75.3	72.2	147.2
400	62.8	73.2	79.8	81.2	78.5	77.9	81.6	81.8	83.9	85.8	88.6	86.9	84.0	76.9	74.3	150.0
500	58.5	67.0	71.2	74.0	75.4	76.8	77.8	78.5	79.3	80.2	81.1	80.0	78.4	74.0	68.9	144.5
630	59.2	68.7	71.5	73.1	76.1	77.9	80.0	79.4	79.0	81.4	82.0	80.7	79.3	74.4	68.5	145.4
800	58.8	69.7	71.7	72.4	77.1	79.1	80.8	79.8	78.9	81.3	80.8	80.3	80.1	75.4	67.9	145.8
1000	55.8	66.0	70.9	73.4	73.9	75.4	76.4	77.3	77.5	78.8	80.2	79.9	78.2	73.1	66.6	144.1
1250	54.8	64.2	69.0	71.9	73.7	75.7	76.7	77.7	78.3	78.7	79.5	78.7	77.0	71.9	65.7	143.9
1600	52.9	63.3	67.7	71.5	72.9	75.2	75.3	77.0	77.4	78.0	78.8	77.5	75.2	70.8	64.7	143.4
2000	49.0	60.9	65.8	69.3	70.8	72.3	73.2	74.2	75.2	76.5	77.0	76.8	74.5	69.3	62.3	142.3
2500	45.2	58.2	64.1	67.5	69.6	71.3	71.2	72.4	73.9	74.7	76.2	75.0	72.6	67.5	59.6	141.4
3150	41.5	55.8	63.3	66.6	68.5	69.5	70.5	71.4	72.8	73.9	74.5	73.8	71.8	66.1	58.6	141.2
4000	34.7	52.1	59.4	63.1	65.1	66.7	67.8	68.6	70.1	71.4	72.5	71.9	69.8	64.1	55.7	140.1
5000	29.6	48.7	56.8	61.1	62.7	64.9	65.8	66.9	67.8	69.6	70.3	70.2	68.2	62.1	53.3	139.2
6300	19.6	42.8	51.2	55.9	57.6	60.0	61.2	62.6	63.8	65.9	67.2	66.7	63.8	58.2	49.7	137.5
8000	5.8	34.3	44.3	49.7	52.6	54.8	55.9	57.5	58.9	61.5	62.4	62.0	59.1	52.7	43.3	135.9
10000	-13.0	23.4	35.7	42.4	46.7	48.8	49.8	51.6	53.3	56.3	56.8	56.5	53.5	46.1	35.2	134.3
DR(A)	66.0	75.9	80.6	82.8	84.0	85.5	86.9	87.3	87.9	89.3	90.5	89.4	87.5	82.4	76.9	156.0
DR(L)	72.3	80.4	85.1	87.0	87.8	89.1	90.5	91.1	91.9	93.1	94.2	93.1	91.4	87.9	85.2	158.1
PM	76.9	87.4	93.1	95.4	95.9	97.5	98.5	99.4	100.3	101.7	103.2	102.1	99.9	94.8	90.0	
PWLT	76.9	88.1	94.2	96.3	95.9	97.5	98.5	99.4	100.9	102.4	104.1	102.9	100.7	94.8	90.6	

RUN 021 18-INCH C-FAN 57.4 DEGREE BLADE ANGLE 7910 RPM DATE 11/27/72 TIME 11-48-05  
 FULL-SCALE DIAMETER = 2.71 M ( 8.88 FT) , FULL-SCALE THRUST = 66723. N ( 15000. LB)

FREQ. Hz	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)																PWL RE	
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	10**-13 WATTS		
50	57.0	63.0	66.5	69.7	71.8	72.8	73.0	74.0	74.6	74.3	75.3	74.8	74.6	73.0	71.3	139.7		
63	55.9	62.2	66.5	69.2	71.5	71.8	72.3	72.7	73.4	73.7	73.3	72.8	73.2	72.0	70.0	138.6		
80	56.8	63.4	68.0	70.0	71.0	72.1	72.3	73.7	73.9	74.2	73.8	73.1	72.7	71.2	69.0	138.8		
107	58.2	64.4	67.9	69.5	71.0	72.3	73.3	73.4	74.4	74.4	74.3	73.8	73.0	71.7	69.2	139.1		
125	58.3	64.5	67.9	69.9	72.0	72.3	73.0	74.2	75.3	75.2	75.5	74.8	74.5	71.9	68.7	139.8		
160	57.1	64.2	68.6	71.9	72.4	73.2	74.3	75.4	76.3	76.9	76.3	76.2	74.9	72.4	68.6	140.8		
200	56.7	64.6	68.8	71.8	73.6	75.0	75.4	76.6	77.0	78.3	78.2	76.7	76.1	73.5	69.1	141.9		
250	61.5	69.0	74.0	73.3	83.1	85.4	84.7	87.8	89.2	92.6	92.7	86.9	88.4	84.8	77.2	153.8		
315	59.7	66.8	70.1	72.7	74.3	75.9	76.1	77.0	77.9	79.7	79.6	78.1	76.8	73.2	69.4	143.0		
400	57.9	65.8	69.7	71.3	73.7	74.8	74.8	75.2	76.6	77.5	78.1	77.3	75.2	72.1	67.4	141.7		
500	58.9	68.4	75.3	75.0	74.3	76.4	74.7	75.4	76.5	77.4	78.7	78.2	75.3	74.0	67.6	143.0		
630	55.1	63.8	68.1	70.5	71.2	72.8	72.6	73.3	74.5	75.3	76.6	76.6	74.5	70.3	66.4	140.5		
800	56.2	64.1	67.8	70.3	72.0	73.5	75.4	74.7	75.5	75.7	77.7	76.7	73.8	70.6	65.8	141.3		
1007	52.8	63.4	68.5	70.6	72.1	73.5	74.8	75.1	75.7	75.8	75.6	75.3	73.3	70.6	64.5	141.0		
1250	51.0	62.1	68.4	71.1	71.9	72.1	72.4	73.1	74.1	74.4	74.9	73.6	72.1	68.6	62.4	140.2		
1600	47.7	59.4	63.8	67.4	68.8	70.3	69.9	70.7	71.5	72.4	72.9	72.8	71.6	66.9	60.8	138.5		
2000	45.9	57.0	61.9	65.2	66.9	68.2	67.9	68.4	69.8	70.6	71.9	70.5	69.4	65.2	58.7	137.3		
2500	41.2	55.3	61.0	63.9	66.5	67.2	67.8	67.3	69.0	69.8	70.8	71.2	68.3	64.2	57.2	137.4		
3150	35.2	51.0	57.0	61.5	63.2	64.7	65.2	65.3	65.9	67.3	67.9	68.9	66.2	61.7	54.5	135.9		
4000	29.3	46.0	53.6	57.5	60.2	61.6	61.4	62.3	63.2	64.5	65.2	65.1	63.2	58.7	50.3	134.2		
5000	21.7	41.1	49.6	53.4	56.0	57.6	58.2	58.8	59.5	60.8	61.9	62.1	59.5	54.7	46.6	131.9		
6300	10.9	34.2	43.4	48.1	50.7	52.9	53.1	53.5	54.7	56.5	57.6	57.1	54.7	49.8	41.4	129.7		
8000	-3.5	25.7	36.2	41.9	44.7	47.7	47.6	47.8	49.5	51.8	52.9	51.6	49.2	44.0	35.2	127.4		
10000	-22.6	14.9	27.4	34.8	37.9	41.8	41.5	41.5	43.8	46.5	47.6	45.4	42.9	37.3	27.4	125.2		
DB(A)	63.2	72.4	77.6	79.4	81.4	83.0	83.1	84.2	85.3	87.1	87.5	85.3	84.2	80.8	74.7	154.3		
DP(L)	59.4	77.1	81.9	83.5	86.7	88.5	88.3	90.2	91.4	93.9	94.1	90.4	90.5	87.3	81.8	156.8		
PNL	73.3	83.2	89.1	90.8	94.2	96.0	95.9	97.5	98.7	100.8	101.1	98.3	97.8	94.3	87.8			
PNLT	73.9	84.4	91.2	92.1	95.7	97.7	97.3	99.3	100.7	103.0	103.4	99.9	99.8	96.2	89.2			

RJN 022 18-INCH O-FAN 57.4 DEGREE BLADE ANGLE 9650 RPM DATE 11/27/72 TIME 11-48-09

FULL-SCALE DIAMETER = 2.22 M ( 7.27 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FREQ. HZ	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)													PWL RE 10**-13 WATTS		
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	60.2	66.2	69.1	71.0	73.0	75.1	76.8	78.2	79.6	80.7	81.1	80.4	79.3	78.8	78.1	144.6
63	50.2	66.2	69.6	71.8	74.3	75.4	76.6	77.5	78.3	80.2	80.1	79.1	79.0	78.0	76.8	143.9
80	59.8	67.2	71.5	73.4	74.8	75.6	75.6	76.0	77.1	77.7	78.1	78.9	78.3	76.7	74.7	143.0
100	61.0	67.8	71.7	74.2	75.5	76.0	76.3	77.2	77.6	77.7	77.6	76.8	77.8	76.9	74.0	143.0
125	50.6	68.1	72.0	73.7	74.7	75.8	76.5	77.2	77.8	78.2	79.0	78.3	76.7	75.9	73.2	143.1
160	59.7	67.7	72.4	74.1	75.2	75.8	77.7	78.1	78.8	78.9	80.0	80.3	78.9	76.8	73.6	144.1
200	59.5	67.1	72.0	73.6	75.4	76.8	77.7	78.4	79.5	80.1	81.2	80.8	79.4	77.1	72.8	144.6
250	58.9	66.7	71.2	73.7	75.6	77.2	78.1	79.3	80.5	80.3	80.6	80.4	78.8	76.0	71.9	144.6
315	61.1	68.3	72.1	74.4	76.7	77.8	78.9	79.5	81.4	81.5	81.9	81.1	78.7	76.4	72.1	145.5
400	62.5	73.4	78.2	78.5	82.6	84.3	83.5	84.9	91.1	92.7	91.5	90.6	87.4	84.8	78.2	154.1
500	58.5	67.6	71.8	73.4	75.8	77.0	78.4	79.1	80.5	81.8	81.9	80.0	79.3	75.7	70.3	145.2
630	58.0	66.3	70.8	73.0	75.2	76.9	77.6	78.7	79.4	81.2	82.1	80.9	78.4	74.5	70.1	145.0
800	58.2	66.9	72.3	75.8	76.2	78.9	77.7	78.9	81.6	83.1	81.5	84.9	79.2	76.3	70.0	146.9
1000	56.0	64.9	69.5	71.6	73.5	75.2	76.5	78.0	78.1	79.3	80.0	79.5	77.5	73.1	67.2	144.0
1250	55.7	65.0	70.3	72.5	74.3	76.5	77.6	78.6	79.2	80.6	81.1	80.5	77.6	73.5	67.3	145.2
1600	52.1	63.6	68.7	71.4	73.4	74.7	76.6	77.8	79.7	80.0	78.9	78.0	75.7	71.1	64.7	144.2
2000	50.5	61.1	66.3	69.3	71.3	72.7	73.5	75.2	75.9	77.0	77.5	77.2	74.5	70.0	63.5	142.7
2500	44.4	58.1	63.7	67.2	69.3	71.0	71.9	72.7	74.9	75.2	76.2	75.5	71.8	67.2	61.0	141.5
3150	39.9	55.1	61.5	65.4	67.9	69.2	70.9	71.7	72.6	73.9	74.2	73.4	70.4	65.6	59.2	140.8
4000	32.0	50.7	58.0	62.4	64.9	66.5	67.6	69.6	70.3	71.3	71.8	71.2	68.4	63.6	55.5	139.7
5000	28.0	47.6	55.1	60.0	62.1	64.3	65.6	66.7	68.4	69.7	69.6	69.3	66.8	61.5	53.1	138.7
6300	18.1	40.7	48.4	54.3	57.0	59.6	61.1	62.8	64.0	65.5	65.6	65.4	62.0	56.8	47.9	136.4
8000	3.3	31.5	41.9	47.9	51.0	53.7	55.1	57.3	58.6	60.1	60.6	59.5	56.3	50.1	41.6	134.1
10000	-16.4	19.8	33.9	40.4	44.1	47.0	48.3	51.2	52.5	54.1	54.8	52.8	49.7	42.3	33.8	131.7
DR(A)	65.6	75.1	80.1	82.3	84.5	86.2	86.8	88.0	90.5	91.8	91.4	91.1	88.0	84.6	78.6	156.8
DR(L)	71.5	79.8	84.3	86.2	88.4	89.9	90.4	91.5	94.3	95.6	95.1	94.7	92.2	89.8	85.8	159.1
PWL	76.4	87.0	92.2	94.2	97.0	98.6	99.0	100.2	103.4	104.6	104.3	103.6	100.9	97.7	91.8	
PWLT	76.4	87.8	93.2	95.4	98.0	99.7	99.8	101.2	105.1	106.5	105.9	105.3	102.3	99.2	93.0	

8372 RPM

43 DEGREE BLADE ANGLE

18-INCH Q-FAN

FULL-SCALE DIAMETER = 3.05 M ( 10.02 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

PWL RE  
10\*\*13 WATTS

SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT )

FREQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**13 WATTS
50	54.5	61.2	64.6	67.8	69.6	70.7	71.1	70.8	70.4	70.5	70.4	70.2	70.3	69.3	67.9	136.3
43	54.5	61.0	65.6	68.3	69.8	69.7	70.1	70.0	70.1	70.0	69.4	69.2	68.3	67.6	66.1	135.6
30	54.1	61.7	66.5	67.5	69.3	70.4	69.9	70.3	70.4	70.5	69.6	68.7	68.6	67.5	65.5	135.6
100	55.5	62.4	66.3	67.5	68.6	70.3	70.4	71.3	71.4	71.3	71.6	71.3	69.8	67.7	65.3	136.4
125	56.6	63.8	66.2	67.2	68.7	69.6	70.3	70.9	71.6	71.7	72.3	71.8	70.7	68.7	65.7	136.7
160	56.5	63.3	65.9	67.9	69.2	69.8	70.8	71.4	71.9	72.2	72.3	71.1	71.0	68.6	65.4	136.9
200	53.3	61.7	66.6	68.9	69.7	71.2	72.3	72.2	72.8	72.9	73.3	71.5	71.5	69.4	65.1	137.6
250	40.2	68.5	72.0	73.0	76.1	79.2	79.7	77.1	75.8	75.6	73.7	72.9	71.8	68.7	65.9	138.9
315	56.7	64.0	67.9	69.4	71.8	73.6	73.9	73.3	73.2	73.6	72.6	71.9	71.3	68.1	64.5	137.4
400	54.8	62.7	66.0	67.6	70.3	70.9	71.1	71.5	72.2	72.0	72.6	71.9	71.9	69.2	65.6	139.9
500	54.8	64.6	70.1	70.7	71.9	73.5	74.7	73.5	73.3	74.0	76.0	74.5	70.7	67.4	64.4	137.1
630	52.7	61.6	65.6	67.9	69.0	69.9	70.4	70.1	70.5	71.9	71.6	72.4	70.7	67.2	63.4	139.0
800	53.0	62.4	66.7	70.9	70.4	72.0	72.0	72.5	73.6	74.3	74.3	73.5	70.4	66.5	62.4	138.3
1000	51.5	62.0	65.9	68.5	69.9	70.4	71.4	71.8	72.8	73.1	73.2	73.1	70.2	64.9	60.7	136.7
1250	48.6	59.7	65.5	65.7	68.0	69.9	70.7	69.5	69.4	71.0	71.2	70.2	68.2	64.0	58.5	135.8
1600	47.6	57.8	63.0	63.8	66.7	67.7	68.0	67.8	68.1	69.3	71.0	68.5	68.7	62.9	55.9	134.9
2000	42.9	55.9	61.1	62.9	65.4	65.7	66.1	65.8	66.2	68.3	69.6	67.4	66.6	62.9	54.7	134.2
2500	39.1	52.8	59.7	61.1	64.0	64.4	64.8	64.3	65.2	66.8	66.8	66.1	65.7	61.9	51.7	132.9
3150	32.7	49.2	56.2	57.7	61.0	62.0	62.0	62.2	62.9	64.7	65.0	64.5	63.5	59.7	51.7	131.1
4000	25.1	44.1	51.4	54.3	57.0	58.6	59.0	59.1	60.0	60.8	62.0	61.4	60.0	56.3	48.4	128.7
5000	18.7	39.3	46.8	50.4	53.3	54.5	54.6	55.4	56.1	57.4	58.1	58.5	56.5	52.2	44.6	126.3
6300	7.6	31.2	40.5	44.3	47.7	49.4	49.9	50.5	51.5	52.8	53.7	53.4	52.0	46.6	38.5	123.9
8000	-6.9	21.5	33.1	37.5	41.6	43.9	44.6	45.2	46.6	47.8	48.7	47.9	47.0	40.3	31.3	123.9
10000	-26.3	9.5	24.3	29.6	34.6	37.6	38.8	39.3	41.0	42.2	43.2	41.6	41.1	32.9	22.7	121.6
DR(A)	50.7	70.3	74.9	76.7	78.4	79.7	80.3	79.8	80.2	81.1	81.6	80.7	79.0	75.6	71.3	148.5
DR(L)	67.1	75.2	79.3	81.0	82.8	84.4	85.0	84.2	84.3	84.7	85.0	84.1	82.8	80.4	77.2	151.2
PWL	71.1	81.2	85.9	87.5	89.9	91.8	92.3	91.4	91.6	92.7	93.2	92.2	91.1	87.7	82.4	
PWLT	72.0	82.0	87.4	88.1	90.8	92.9	93.6	92.1	91.6	92.7	94.6	92.2	91.1	87.7	82.4	

FUN 024 18-INCH C-FAN 43 DEGREE BLADE ANGLE 10210 RPM DATE 11/27/72 TIME 11-48-20

FULL-SCALE DIAMETER = 2.47 M ( 8.12 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

PRFO.	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**--13 WATTS
HZ																
50	57.4	63.4	66.2	68.4	69.5	71.1	72.8	73.5	75.1	75.7	76.1	75.4	73.5	72.9	72.2	139.7
63	55.3	62.2	66.2	69.4	71.0	71.5	72.8	73.5	74.1	74.5	75.3	75.8	75.5	73.9	72.0	139.8
80	54.7	62.6	67.2	69.9	71.2	72.3	72.7	73.1	73.6	73.6	73.5	74.5	73.9	73.4	70.7	139.3
100	57.0	64.1	68.0	69.7	71.2	72.3	73.0	73.6	73.8	73.4	73.5	73.0	72.4	72.4	70.7	138.9
125	57.0	64.0	67.9	69.6	70.7	71.8	73.0	73.9	74.7	74.9	75.0	74.0	72.4	71.8	70.6	139.3
160	55.8	63.6	67.1	69.3	71.4	72.4	73.0	73.6	74.7	75.6	75.5	75.7	74.2	72.3	69.9	139.8
200	54.4	63.0	67.3	70.3	71.6	72.2	73.4	74.1	75.7	76.1	76.4	76.7	75.3	74.1	69.8	140.6
250	55.9	64.7	68.7	70.5	71.8	73.2	74.1	75.3	75.6	76.3	76.6	76.2	75.1	73.2	69.2	140.8
315	56.9	64.3	68.1	71.1	73.0	74.1	75.3	75.5	75.9	76.8	77.3	76.8	74.7	72.9	69.3	141.3
400	61.0	69.8	71.5	72.8	76.1	80.2	79.3	81.2	78.8	78.2	80.5	81.2	82.1	82.8	71.5	146.4
500	54.6	63.8	68.3	70.4	72.5	73.4	74.4	75.3	75.9	76.6	77.4	76.4	75.3	73.7	68.3	141.3
630	54.3	63.3	67.3	70.2	71.7	73.8	73.6	74.2	75.2	76.0	77.6	76.8	74.2	71.7	68.3	141.0
800	54.9	65.8	70.0	72.3	73.2	74.7	76.6	74.6	75.2	75.9	78.9	79.7	78.7	74.3	69.5	143.2
1000	52.4	63.3	68.5	70.5	71.3	72.5	73.3	73.7	74.4	75.2	76.3	76.0	73.8	70.5	66.2	140.7
1250	52.7	64.2	68.3	70.4	73.0	74.5	75.3	76.2	76.4	77.0	77.1	77.8	75.7	71.4	65.8	142.4
1600	49.6	61.6	67.0	69.3	72.7	73.5	73.0	74.5	74.7	75.8	75.3	75.0	72.2	69.0	63.5	141.1
2000	46.0	57.8	63.8	67.3	69.5	70.6	71.2	73.2	73.5	73.7	73.7	74.3	70.3	67.3	61.3	139.6
2500	40.7	55.8	61.5	65.2	67.3	68.2	68.7	69.2	70.5	70.9	71.7	71.7	69.8	65.4	59.0	138.2
3150	36.4	52.6	59.6	63.4	66.4	67.7	67.7	67.7	69.6	69.9	71.7	71.2	68.9	63.9	56.9	138.3
4000	30.2	48.2	56.5	60.4	62.9	64.0	64.6	65.4	66.8	67.7	68.8	69.0	65.6	61.9	54.0	136.9
5000	24.5	44.6	52.9	57.2	59.6	61.3	61.9	62.2	64.4	65.2	66.6	66.3	63.6	58.5	51.4	135.3
6300	14.4	37.5	46.7	51.8	54.5	56.6	57.8	58.5	60.2	61.5	62.6	62.6	59.5	53.8	46.2	133.3
8000	-0.4	28.5	39.5	45.0	48.9	50.7	52.1	53.2	55.1	56.4	57.1	56.7	54.1	48.2	39.5	131.1
10000	-20.3	17.1	30.7	36.9	42.2	44.0	45.7	47.2	49.4	50.6	50.9	50.0	47.6	41.3	31.2	128.8

DB(A) 62.5 72.8 77.1 79.5 81.6 83.2 83.7 84.3 84.6 85.2 86.2 86.4 84.5 82.3 76.0 152.2

DB(L) 68.0 76.6 80.4 82.7 84.6 86.4 86.9 87.6 87.8 88.3 89.2 89.2 88.0 86.9 82.0 154.7

PWL 73.5 83.8 88.3 91.1 93.6 95.2 95.3 96.3 96.8 97.4 98.3 98.3 98.2 96.7 95.2 87.8

PWL 74.3 84.6 88.8 91.1 94.2 96.2 96.4 97.3 96.8 97.4 98.8 98.8 98.9 98.3 96.7 87.8

PIN 025 18-INCH Q-FAN 38 DEGREE BLADE ANGLE 9160 RPM

DATE 11/27/72

TIME 11-48-24

FULL-SCALE DIAMETER = 3.18 M ( 10.42 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

FREQ. Hz	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)										PWL RE 10**13 WATTS					
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
50	55.4	61.1	64.7	68.1	70.6	71.2	71.7	71.3	72.3	72.1	70.9	71.0	71.1	69.9	68.7	137.1
63	53.0	59.3	63.7	67.4	69.1	69.2	69.4	69.8	70.0	70.3	69.7	69.5	69.4	67.6	66.2	135.3
80	53.7	60.8	65.2	67.6	68.6	70.0	70.2	70.8	70.7	71.1	70.4	69.5	70.4	68.1	65.9	135.9
100	54.6	62.5	65.3	67.4	68.4	69.7	70.7	70.3	71.2	71.3	71.4	71.5	69.9	68.9	66.3	136.3
125	56.0	62.4	65.1	67.0	68.0	70.1	70.7	70.8	71.9	72.6	72.4	71.6	71.4	69.8	66.8	137.0
160	55.5	62.3	65.5	68.3	70.0	70.6	71.6	72.3	72.9	73.6	73.6	71.9	72.0	70.8	66.7	137.8
200	52.8	61.7	66.5	68.9	70.3	71.4	72.6	72.5	73.4	73.2	73.6	72.6	72.0	70.7	66.5	138.1
250	55.6	63.4	66.4	70.4	71.2	72.3	72.8	73.7	73.6	74.0	74.3	74.3	73.7	70.2	66.9	139.0
315	58.8	65.9	68.8	73.8	72.7	74.8	74.7	77.6	76.6	77.1	78.0	79.3	78.4	71.6	69.5	142.5
400	54.3	62.5	66.1	68.2	70.6	70.9	71.1	71.9	72.5	73.1	73.9	72.7	71.6	69.0	65.3	137.9
500	53.6	62.3	65.7	68.6	70.5	70.6	71.1	72.0	72.9	73.5	74.9	75.1	72.0	69.4	65.5	138.6
630	53.5	62.7	66.0	69.7	72.6	72.5	72.5	71.9	71.9	74.2	77.0	79.0	74.1	70.4	65.3	140.5
800	53.6	64.0	67.5	69.0	70.7	71.4	71.6	72.3	73.7	75.8	76.1	74.6	72.2	69.5	63.5	139.7
1000	51.7	61.8	66.2	67.8	69.7	70.9	71.5	72.0	73.1	74.2	74.7	73.4	71.0	68.5	62.2	138.8
1250	52.2	63.2	66.5	68.0	70.0	71.1	71.4	71.0	71.2	72.0	74.9	72.8	71.3	68.7	62.3	138.9
1600	49.7	58.2	62.5	65.6	69.7	72.8	70.3	68.3	70.5	71.3	71.8	72.8	71.0	68.1	60.5	138.3
2000	44.2	55.7	61.2	63.7	66.7	67.2	66.9	66.4	67.3	69.4	70.1	69.2	68.7	65.9	57.9	136.1
2500	40.7	54.6	60.7	63.7	65.3	66.2	66.2	65.7	66.8	68.4	69.9	68.7	68.3	64.2	56.2	136.2
3150	34.8	50.6	58.3	60.1	63.0	63.8	62.8	63.4	64.5	66.9	67.5	67.0	66.3	61.6	53.6	135.0
4000	27.9	45.6	54.0	57.3	59.8	60.5	60.0	60.4	62.1	63.9	64.8	64.3	62.8	59.1	50.0	133.6
5000	21.7	41.3	51.4	53.5	56.1	56.8	56.4	56.7	58.2	60.0	61.1	61.3	60.1	56.0	46.9	131.6
6300	11.7	34.5	48.5	48.4	51.3	51.4	52.1	52.3	53.8	56.1	56.9	57.4	55.3	50.6	41.0	129.9
8000	-1.8	26.1	44.5	42.5	45.9	45.5	47.4	47.5	49.0	51.8	52.3	53.0	49.9	44.4	34.0	128.2
10000	-20.1	15.4	39.0	35.6	39.7	38.9	42.1	42.1	43.7	46.9	47.1	47.9	43.7	37.2	25.5	126.5

08(A) 61.2 70.8 74.7 77.2 79.3 80.5 80.2 80.4 81.2 82.5 83.7 83.5 81.3 78.0 72.3 148.8

08(L) 66.6 74.6 78.2 81.2 82.7 83.7 83.9 84.5 85.0 85.8 86.6 86.5 85.0 81.9 78.2 152.0

PWL 71.3 81.0 86.3 89.0 91.1 92.7 92.0 92.2 92.9 94.2 95.3 94.8 93.5 89.9 84.0

PWLT 71.9 82.1 86.3 89.7 91.1 93.9 92.0 93.0 93.5 94.8 95.9 96.2 94.5 89.9 84.6

RUN 026 18-INCH Q-FAN 38 DEGREE BLADE ANGLE 10500 RPM DATE 11/27/72 TIME 11-48-27

FULL-SCALE DIAMETER = 2.82 M ( 9.27 FT) , FULL-SCALE THRUST = 66723. N ( 15000. LB)

FREQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**13 WATTS
	SPL AT AZIMUTH ANGLE (DEG) AND SIDELINE DISTANCE OF 152.4 M ( 500. FT)															
50	57.5	61.4	64.7	67.6	69.6	70.5	71.2	71.3	72.0	72.6	73.4	73.0	72.6	72.1	69.4	137.8
63	56.3	60.0	65.2	68.1	69.6	70.0	70.2	71.1	71.2	72.1	71.4	71.2	70.9	70.9	68.4	136.8
80	55.9	62.3	66.1	68.4	69.1	70.2	70.7	71.1	71.9	72.1	72.4	71.5	71.4	70.4	67.1	137.1
100	57.3	62.9	66.3	67.8	68.9	70.2	71.4	72.6	72.2	72.6	72.4	73.9	73.3	69.5	67.8	137.3
125	57.2	62.9	66.6	67.5	69.5	71.1	71.7	72.6	73.2	73.6	73.9	73.9	73.8	71.3	67.8	138.3
160	55.0	62.3	66.5	69.3	70.5	71.1	71.8	74.0	73.4	74.7	75.1	74.1	73.8	72.3	68.2	139.0
200	55.8	62.2	66.4	69.2	70.5	72.1	73.3	74.2	74.3	75.7	75.1	74.9	73.5	71.7	67.9	139.4
250	57.3	63.4	66.9	70.1	71.7	72.8	73.5	74.2	73.8	75.2	75.5	74.8	73.4	71.1	67.1	139.6
315	63.0	68.7	70.3	73.8	75.4	77.0	80.2	79.1	78.1	80.4	82.0	79.5	77.2	77.8	70.8	144.7
400	56.3	64.2	68.3	70.0	72.1	72.7	73.9	74.4	74.5	76.1	76.6	75.2	73.3	71.0	65.8	140.1
500	57.1	63.8	67.7	70.0	71.5	72.6	72.4	73.3	73.9	75.8	76.4	76.1	74.0	70.3	65.7	140.1
630	57.2	66.0	69.3	75.2	78.1	78.2	76.0	78.2	78.0	78.4	79.8	80.7	77.4	71.9	67.8	144.2
800	54.3	63.7	67.5	71.0	72.7	73.1	73.6	74.6	74.2	75.1	75.8	75.9	73.4	70.0	64.2	140.5
1000	56.2	65.1	69.7	71.5	72.5	75.4	75.2	74.5	76.3	76.7	78.0	78.4	76.0	71.3	64.7	142.5
1250	54.6	61.5	67.8	71.7	71.8	72.6	72.6	72.8	73.5	75.0	75.6	75.6	73.5	69.2	62.5	140.7
1600	49.7	59.9	64.0	67.8	70.7	73.3	72.6	71.6	71.5	72.6	75.3	73.5	72.0	68.6	60.8	139.8
2000	45.4	57.2	62.7	65.4	67.4	68.5	70.1	69.1	70.1	71.6	73.1	72.2	70.4	66.2	58.2	138.2
2500	41.9	55.6	61.2	64.7	66.8	67.9	68.1	68.7	69.8	71.9	71.8	71.9	70.5	65.7	56.7	138.4
3150	36.3	51.2	58.3	62.0	64.3	65.5	65.5	65.8	66.5	68.8	70.3	69.5	68.3	64.0	54.3	137.1
4000	28.9	47.1	54.5	58.8	61.1	62.5	62.3	62.9	63.8	65.9	67.5	67.3	65.1	60.3	50.3	135.7
5000	22.7	42.8	50.4	54.5	57.1	58.3	58.9	59.0	60.7	63.2	64.1	64.3	62.1	56.7	46.9	133.6
6300	12.4	35.0	44.2	49.1	52.0	53.7	53.9	54.6	56.0	58.8	59.4	59.9	57.0	51.6	41.7	131.4
8000	-1.4	25.6	37.0	42.9	46.3	48.6	48.5	49.8	50.9	54.0	54.3	55.0	51.3	45.7	35.5	129.3
10000	-20.0	13.9	28.4	35.7	39.8	42.8	42.4	44.3	45.2	48.5	48.5	49.4	44.8	38.8	27.9	127.1

DR(A) 53.9 72.1 76.4 79.9 81.7 83.0 82.9 83.2 83.6 84.8 85.9 85.7 83.4 79.7 73.4 150.3

DR(L) 69.2 75.9 79.7 82.8 84.6 85.7 86.3 86.6 86.7 87.9 88.8 88.3 86.4 84.1 79.4 153.9

PNL 74.2 82.4 87.0 90.7 92.9 94.1 94.3 94.5 95.1 96.8 97.5 97.2 95.4 91.8 85.1

PNLT 75.3 83.2 87.0 92.2 94.9 95.9 95.4 95.9 96.5 97.6 98.7 98.5 96.6 92.9 85.8

RUN 027 18-INCH C-FAN 52.6 DEGREE BLADE ANGLE 9385 RPM DATE 11/27/72 TIME 11-48-31																
FULL-SCALE DIAMETER = 2.31 M ( 7.59 FT ) , FULL-SCALE THPST = 66723. N ( 15000. LB )																
FREQ.	SPL AT AZIMUTH ANGLE (DEG) AND SIDE LINE DISTANCE OF 152.4 M ( 500. FT )															
HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 WATTS
50	59.6	64.6	67.5	69.4	70.7	72.3	74.2	75.6	76.0	77.4	77.5	76.8	76.2	75.2	74.7	141.4
63	58.0	64.1	66.9	70.1	72.2	73.0	74.5	75.6	76.0	75.9	76.7	76.8	76.7	74.6	73.1	141.1
80	57.5	63.5	68.4	71.3	71.9	73.2	73.0	73.9	74.0	74.6	75.2	75.2	75.2	73.6	72.1	140.0
100	58.4	64.5	69.4	70.8	72.1	73.2	73.9	74.5	75.2	74.8	75.1	74.4	74.1	72.6	70.9	139.9
125	58.7	64.9	68.5	70.8	71.8	73.4	74.4	74.8	75.0	75.3	75.4	75.2	73.3	72.3	70.8	140.1
160	57.6	64.8	68.3	70.5	73.1	73.7	74.9	75.5	75.9	76.5	76.9	76.7	75.3	72.7	72.8	141.1
200	55.9	64.4	68.7	71.7	72.7	73.6	75.5	75.8	76.9	77.8	77.3	76.6	75.7	73.2	72.7	141.6
250	56.3	64.3	68.6	71.1	73.2	75.1	75.8	76.7	77.1	77.4	77.8	76.6	75.5	73.6	70.3	141.7
315	58.5	66.0	69.7	72.3	73.9	77.2	76.8	77.7	78.0	78.7	80.0	78.2	76.4	73.5	70.0	143.0
400	61.1	70.8	77.1	75.9	78.3	85.4	80.4	81.8	84.9	84.8	87.7	86.1	83.8	79.4	72.9	149.7
500	56.1	65.2	69.7	72.1	73.7	74.9	75.8	77.2	77.7	78.5	79.3	77.4	75.7	73.1	68.2	142.6
630	55.9	63.7	68.2	71.1	73.3	73.7	75.0	76.4	76.8	77.9	80.2	78.2	76.1	72.6	68.0	142.5
800	58.1	66.0	69.9	72.7	75.9	75.6	75.6	78.3	78.5	78.0	79.9	81.6	75.9	72.7	68.4	144.0
1000	52.4	63.0	67.4	70.7	72.4	73.9	74.9	74.9	76.5	76.4	77.4	76.1	74.4	70.7	65.6	141.6
1250	51.6	62.7	67.8	70.4	73.0	74.3	75.6	76.2	77.2	77.0	77.6	76.5	74.5	70.9	65.1	142.3
1600	49.9	61.4	66.0	69.9	72.2	73.0	74.4	75.5	75.7	77.0	76.9	74.7	73.4	69.4	63.0	141.7
2000	46.1	58.9	64.6	66.9	69.9	71.4	72.3	72.8	73.5	74.6	75.6	73.7	71.4	66.9	61.1	140.3
2500	42.3	55.2	61.2	64.6	67.5	68.9	69.5	70.8	71.7	72.3	73.3	72.1	70.0	65.1	58.7	138.8
3150	37.1	53.2	60.2	63.7	66.1	67.4	67.9	69.2	70.1	71.5	72.1	71.1	68.9	64.2	56.9	138.6
4000	30.3	48.5	56.0	60.7	62.9	64.5	65.9	66.7	67.7	68.5	69.6	68.3	65.9	61.2	53.8	137.2
5000	25.6	45.6	53.4	58.0	60.3	61.8	63.6	64.2	65.2	66.5	67.4	65.8	63.8	58.7	51.4	135.9
6300	15.2	38.3	47.0	52.2	55.3	57.2	58.7	60.4	61.1	62.6	63.4	62.2	59.6	54.7	46.0	133.9
8000	1.6	29.6	40.5	46.5	49.8	52.0	53.7	55.2	56.2	57.2	58.4	57.0	54.6	49.0	40.0	132.0
10000	-16.9	18.5	32.3	39.5	43.4	46.0	47.9	49.3	50.6	51.1	52.6	51.0	48.7	42.0	32.3	130.1
DB(A)	63.6	73.0	78.0	80.2	82.6	85.0	84.5	85.7	86.8	87.1	88.6	87.5	85.0	81.2	76.0	153.5
DB(L)	69.5	77.4	82.1	83.9	85.9	88.9	88.0	89.1	90.2	90.6	92.0	91.0	89.0	86.0	83.0	156.0
PNL	74.2	84.5	90.2	91.8	94.2	97.7	96.4	97.6	99.2	99.6	101.2	99.9	97.8	93.8	88.5	
PNLT	75.6	85.4	91.4	92.4	95.2	99.3	97.1	98.3	100.4	100.6	102.5	101.3	99.0	94.8	89.1	



RJN 328 18-INCH C-FAN 52.6 DEGREE BLADE ANGLE 10150 RPM DATE 11/27/72 TIME 11-48-34

FULL-SCALE DIAMETER = 2.18 M ( 7.15 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )

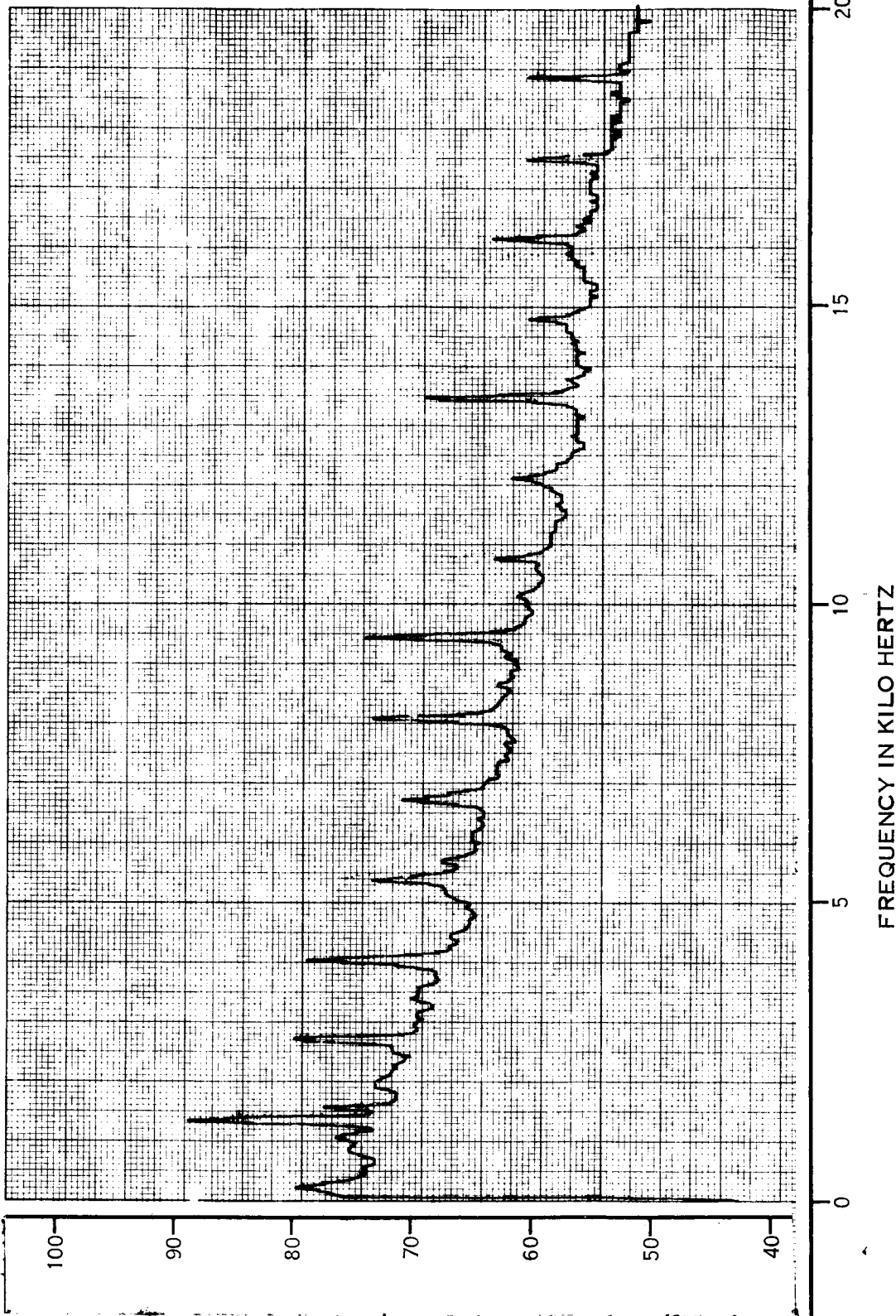
FREQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**-13 WATTS
50	59.6	65.3	67.9	70.1	71.7	73.7	76.0	77.4	78.7	79.4	80.0	79.7	78.4	77.3	76.9	143.5
63	59.5	65.1	68.4	71.6	73.2	74.7	75.9	77.1	77.2	77.6	78.1	77.9	77.4	76.1	74.4	142.4
80	59.6	66.0	69.9	72.6	73.3	74.7	74.9	75.3	76.2	77.0	77.6	78.2	77.6	75.3	73.4	142.1
100	60.8	66.5	70.9	73.6	74.1	75.4	75.1	76.5	76.5	76.3	76.6	75.9	76.3	76.1	73.6	142.0
125	59.4	66.6	70.5	72.0	73.1	74.7	75.6	75.8	76.6	77.3	77.6	77.2	75.3	74.2	72.8	141.8
160	59.2	66.0	70.7	73.0	74.1	75.3	75.4	77.0	77.1	78.0	78.6	78.1	77.1	75.5	72.7	142.6
200	58.8	65.7	70.4	72.4	74.2	75.3	76.3	77.2	78.1	79.2	78.8	78.3	77.5	74.9	71.2	142.9
250	59.1	66.1	70.1	72.6	74.7	75.6	77.0	77.7	78.8	79.7	79.0	78.8	77.2	75.1	71.3	143.2
315	60.3	67.1	70.2	73.3	75.1	76.7	78.2	78.3	79.0	79.8	80.2	79.2	77.4	75.0	71.0	143.9
400	69.5	74.2	75.9	77.4	81.0	80.9	83.7	85.3	87.7	88.6	88.2	87.4	85.8	85.4	71.4	151.6
500	58.8	66.5	70.9	73.1	74.9	76.5	78.1	78.7	79.8	80.5	80.8	79.5	77.7	75.6	69.2	144.4
630	57.2	65.2	69.7	71.9	74.6	76.4	77.0	77.9	78.8	80.1	80.5	79.4	77.1	73.9	69.2	143.9
800	58.4	65.3	69.4	72.9	74.4	78.1	77.9	78.0	79.9	82.5	80.4	83.6	77.6	73.4	69.4	145.5
1000	54.4	63.8	68.4	71.0	72.7	74.6	75.4	76.4	77.8	78.4	78.7	78.4	76.2	71.7	66.9	142.9
1250	54.6	65.4	68.7	72.4	74.5	75.4	76.1	78.0	78.7	79.2	79.1	78.9	76.2	71.9	66.7	143.9
1600	51.1	62.1	67.2	70.5	72.9	74.0	75.3	76.3	78.0	78.0	78.3	77.5	75.2	70.5	64.7	143.1
2000	48.1	59.4	64.9	68.4	70.4	71.7	72.8	75.1	75.9	76.8	76.3	76.7	72.9	69.1	62.6	141.9
2500	43.3	56.2	62.1	66.3	68.1	69.6	70.8	71.3	73.2	74.0	74.5	74.9	71.6	67.0	60.3	140.4
3150	39.1	54.6	59.8	63.8	66.9	68.1	69.9	70.6	72.3	72.9	73.9	73.4	70.4	65.6	58.3	140.2
4000	32.5	50.5	56.3	60.7	63.7	65.3	66.9	68.2	69.9	71.7	71.1	71.0	67.7	62.7	55.5	139.0
5000	27.1	46.5	53.8	58.4	61.2	62.7	64.5	65.7	67.7	68.5	68.8	68.4	65.7	60.6	52.8	137.6
6300	16.9	38.8	47.2	52.9	56.6	58.7	59.9	61.1	63.1	64.6	64.9	64.2	62.1	56.2	48.0	135.5
8000	2.6	29.8	40.2	45.9	49.8	52.5	54.7	55.5	57.9	60.0	59.9	58.8	55.6	50.4	40.9	133.3
10000	-16.7	18.4	31.7	37.8	42.1	45.5	48.7	49.1	52.0	54.6	54.1	52.6	48.2	43.5	32.3	131.1
DB(A)	67.5	74.6	78.3	81.2	83.5	84.9	86.1	87.2	88.8	89.8	89.5	89.5	86.7	84.1	76.8	155.2
DR(L)	73.0	79.2	82.7	85.1	87.2	88.5	89.7	90.8	92.3	93.2	93.0	92.8	90.8	89.1	84.1	157.6
PWL	79.2	86.7	90.3	93.0	95.7	96.7	98.4	99.7	101.4	102.3	102.2	101.8	99.6	97.3	88.9	
PWL	90.8	87.9	91.2	93.7	96.7	97.4	99.3	100.8	102.8	103.7	103.4	103.3	100.9	99.0	88.9	

18 INCH MODEL--43 DEGREE BLADE ANGLE AT 11300 RPM										DATE 01/31/73				TIME 10-29-33			
FULL-SCALE DIAMETER = 2.36 M ( 7.73 FT ) , FULL-SCALE THRUST = 66723. N ( 15000. LB )																	
FREQ. HZ	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	PWL RE 10**--13 WATTS	
50	-35.2	-29.2	-25.8	-23.6	-22.1	-21.0	-20.3	-19.9	-19.8	-19.9	-20.3	78.7	-22.1	-23.6	-25.8	133.5	
63	-35.3	-29.2	-25.9	-23.7	-22.1	-21.1	-20.3	-19.9	-19.8	-19.9	-20.3	80.7	-22.1	-23.7	-25.9	135.6	
80	-35.3	-29.3	-25.9	-23.7	-22.1	-21.1	-20.4	-19.9	-19.8	-20.0	-20.4	81.8	-22.1	-23.7	-25.9	136.7	
100	-35.4	-29.3	-25.9	-23.7	-22.2	-21.1	-20.4	-20.0	-19.8	-20.0	-20.4	80.3	-22.2	-23.7	-25.9	135.2	
125	-35.6	-29.4	-26.0	-23.7	-22.2	-21.1	-20.4	-20.0	-19.8	-20.0	-20.4	80.9	-22.2	-23.7	-26.0	135.8	
160	-35.7	-29.5	-26.0	-23.8	-22.2	-21.1	-20.4	-20.0	-19.9	-20.0	-20.4	80.7	-22.2	-23.8	-26.0	135.6	
200	-35.9	-29.6	-26.1	-23.8	-22.3	-21.2	-20.5	-20.0	-19.9	-20.0	-20.5	80.5	-22.3	-23.8	-26.1	135.5	
250	-36.2	-29.7	-26.2	-23.9	-22.3	-21.2	-20.5	-20.1	-19.9	-20.1	-20.5	80.3	-22.3	-23.9	-26.2	135.3	
315	-36.5	-29.8	-26.3	-24.0	-22.4	-21.3	-20.6	-20.1	-20.0	-20.1	-20.6	81.4	-22.4	-24.0	-26.3	136.6	
400	-36.9	-30.1	-26.4	-24.1	-22.5	-21.4	-20.6	-20.2	-20.1	-20.2	-20.6	85.0	-22.5	-24.1	-26.4	140.3	
500	-37.4	-30.3	-26.6	-24.2	-22.6	-21.5	-20.7	-20.3	-20.1	-20.3	-20.7	82.9	-22.6	-24.2	-26.6	138.3	
630	-38.1	-30.6	-26.8	-24.4	-22.7	-21.6	-20.8	-20.4	-20.2	-20.4	-20.8	82.3	-22.7	-24.4	-26.8	137.8	
800	-38.9	-31.0	-27.1	-24.6	-22.9	-21.7	-21.0	-20.5	-20.4	-20.5	-21.0	83.1	-22.9	-24.6	-27.1	138.7	
1000	-40.0	-31.6	-27.4	-24.9	-23.1	-21.9	-21.1	-20.7	-20.5	-20.7	-21.1	84.6	-23.1	-24.9	-27.4	140.5	
1250	-41.2	-32.2	-27.8	-25.2	-23.4	-22.1	-21.3	-20.9	-20.7	-20.9	-21.3	85.3	-23.4	-25.2	-27.8	141.4	
1600	-43.0	-33.0	-28.4	-25.6	-23.7	-22.4	-21.6	-21.1	-21.0	-21.1	-21.6	83.2	-23.7	-25.6	-28.4	139.7	
2000	-45.1	-34.1	-29.1	-26.1	-24.1	-22.8	-21.9	-21.4	-21.2	-21.4	-21.9	82.6	-24.1	-26.1	-29.1	139.6	
2500	-47.8	-35.4	-29.9	-26.7	-24.6	-23.2	-22.3	-21.8	-21.6	-21.8	-22.3	79.8	-24.6	-26.7	-29.9	137.4	
3150	-51.3	-37.1	-31.1	-27.6	-25.3	-23.8	-22.8	-22.3	-22.1	-22.3	-22.8	79.2	-25.3	-27.6	-31.1	137.7	
4000	-56.1	-39.4	-32.6	-28.7	-26.2	-24.6	-23.5	-22.9	-22.7	-22.9	-23.5	77.1	-26.2	-28.7	-32.6	136.7	
5000	-58.8	-40.6	-33.4	-29.3	-26.7	-24.9	-23.8	-23.2	-23.0	-23.2	-23.8	74.8	-26.7	-29.3	-33.4	135.1	
6300	-65.7	-44.1	-35.6	-31.0	-28.1	-26.2	-25.0	-24.3	-24.1	-24.3	-25.0	70.8	-28.1	-31.0	-35.6	132.9	
8000	-76.3	-49.4	-39.2	-33.7	-30.3	-28.2	-26.8	-26.0	-25.8	-26.0	-26.8	65.8	-30.3	-33.7	-39.2	130.5	
10000	-92.1	-57.2	-44.5	-37.8	-33.7	-31.1	-29.5	-28.6	-28.3	-28.6	-29.5	59.9	-33.7	-37.8	-44.5	128.2	
DB(A)	-30.9	-22.2	-17.7	-14.8	-12.8	-11.5	-10.6	-10.1	-9.9	-10.1	-10.6	93.1	-12.8	-14.8	-17.7	147.6	
DB(L)	-24.7	-17.8	-13.9	-11.4	-9.7	-8.5	-7.7	-7.2	-7.1	-7.2	-7.7	95.1	-9.7	-11.4	-13.9	151.5	
PNL	-22.1	-11.4	-6.2	-3.0	-0.9	0.5	1.5	2.0	2.2	2.0	1.5	105.5	-0.9	-3.0	-6.2		
PNLT	-22.1	-11.4	-6.2	-3.0	-0.9	0.5	1.5	2.0	2.2	2.0	1.5	105.5	-0.9	-3.0	-6.2		

## APPENDIX C

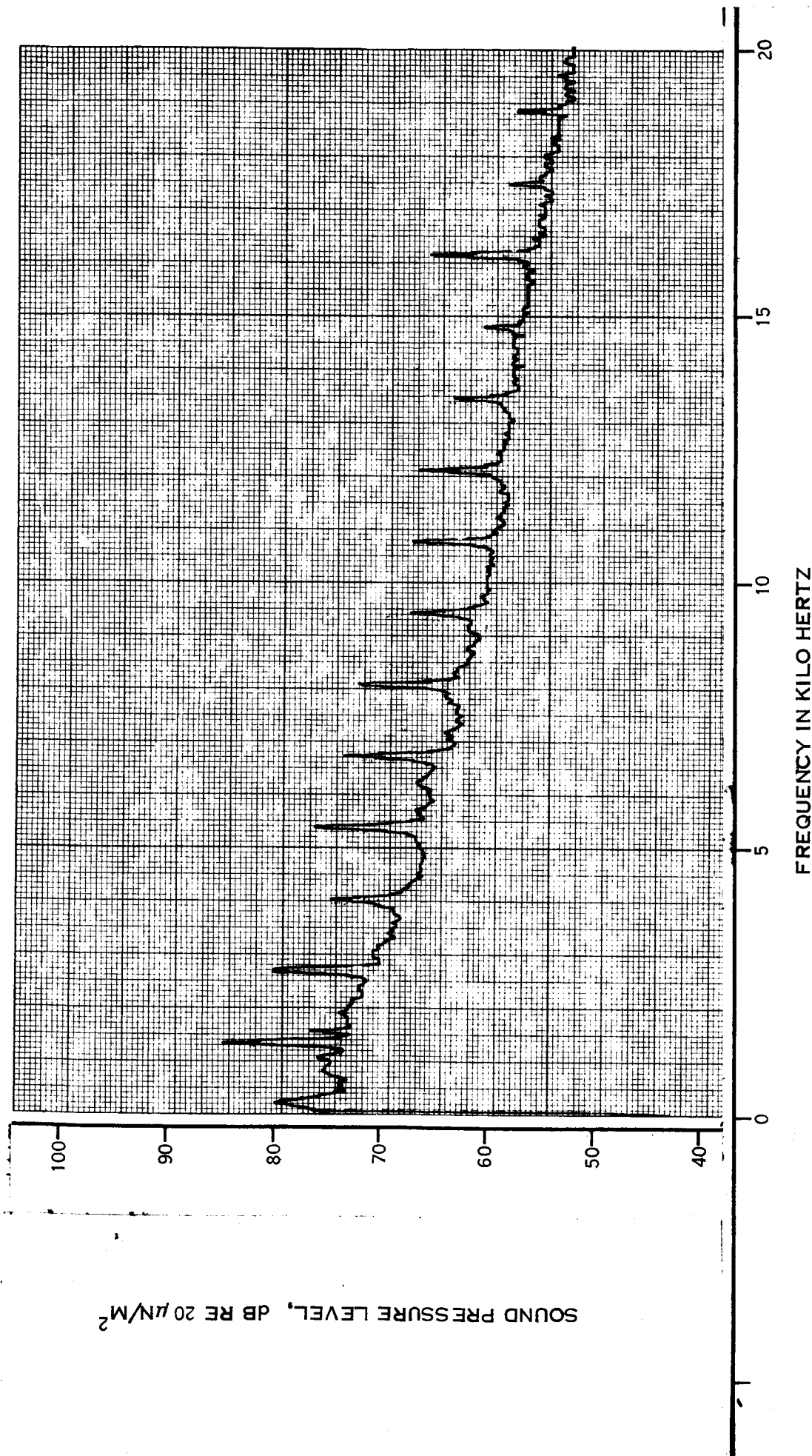
### NARROW BAND SOUND PRESSURE LEVEL DATA

The narrow band (60 Hz bandwidth at the 3 dB down points) sound pressure levels from approximately 20 Hz to 20,000 Hz for selected test conditions used in this report are presented in this section. Most of the analyses represent 512 ensemble averages and, thus, have good statistics since that represents approximately 26 seconds of data.



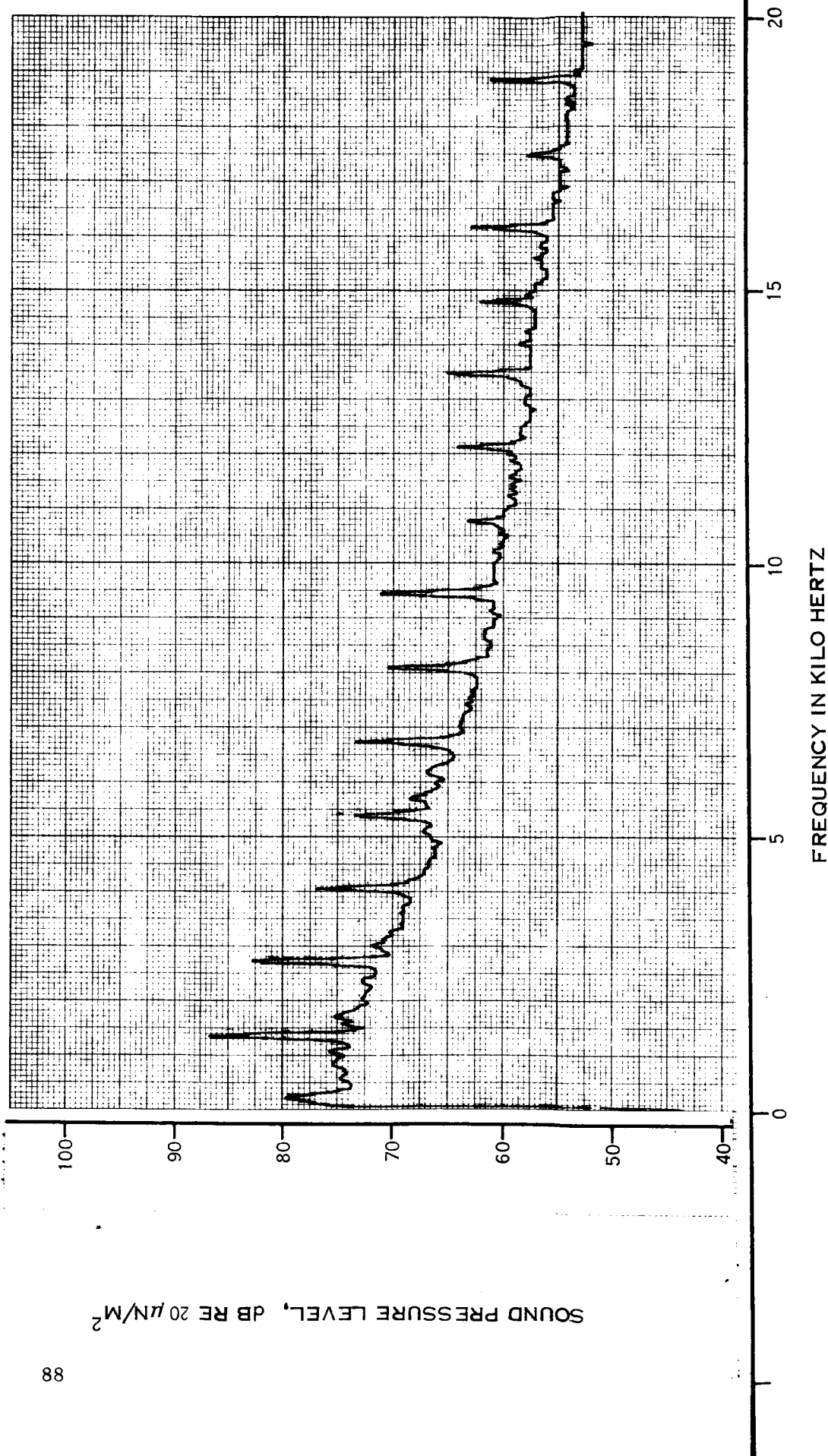
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 0 DEGREES AZIMUTH, 7.62 M (25 FT)



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)

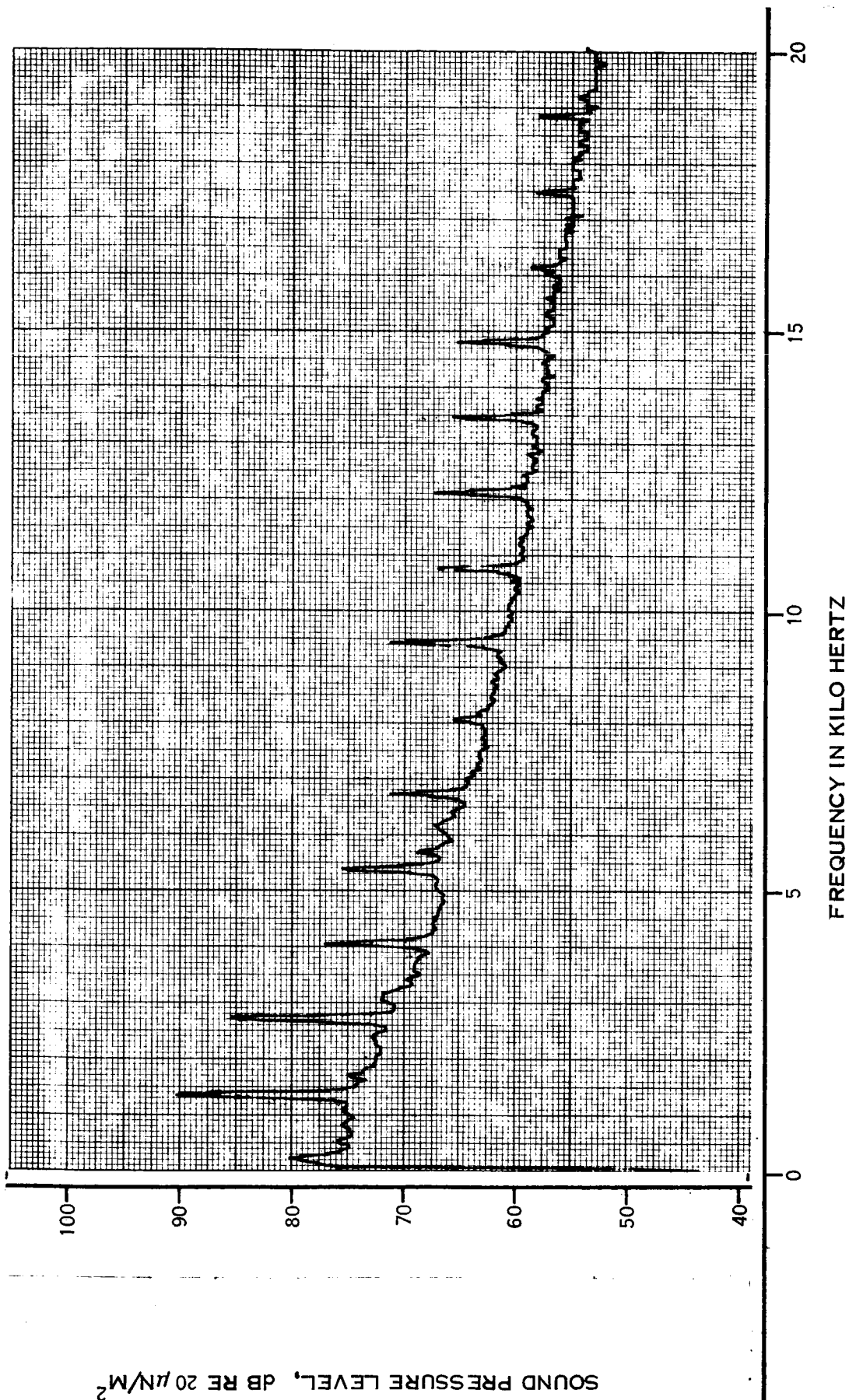


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)

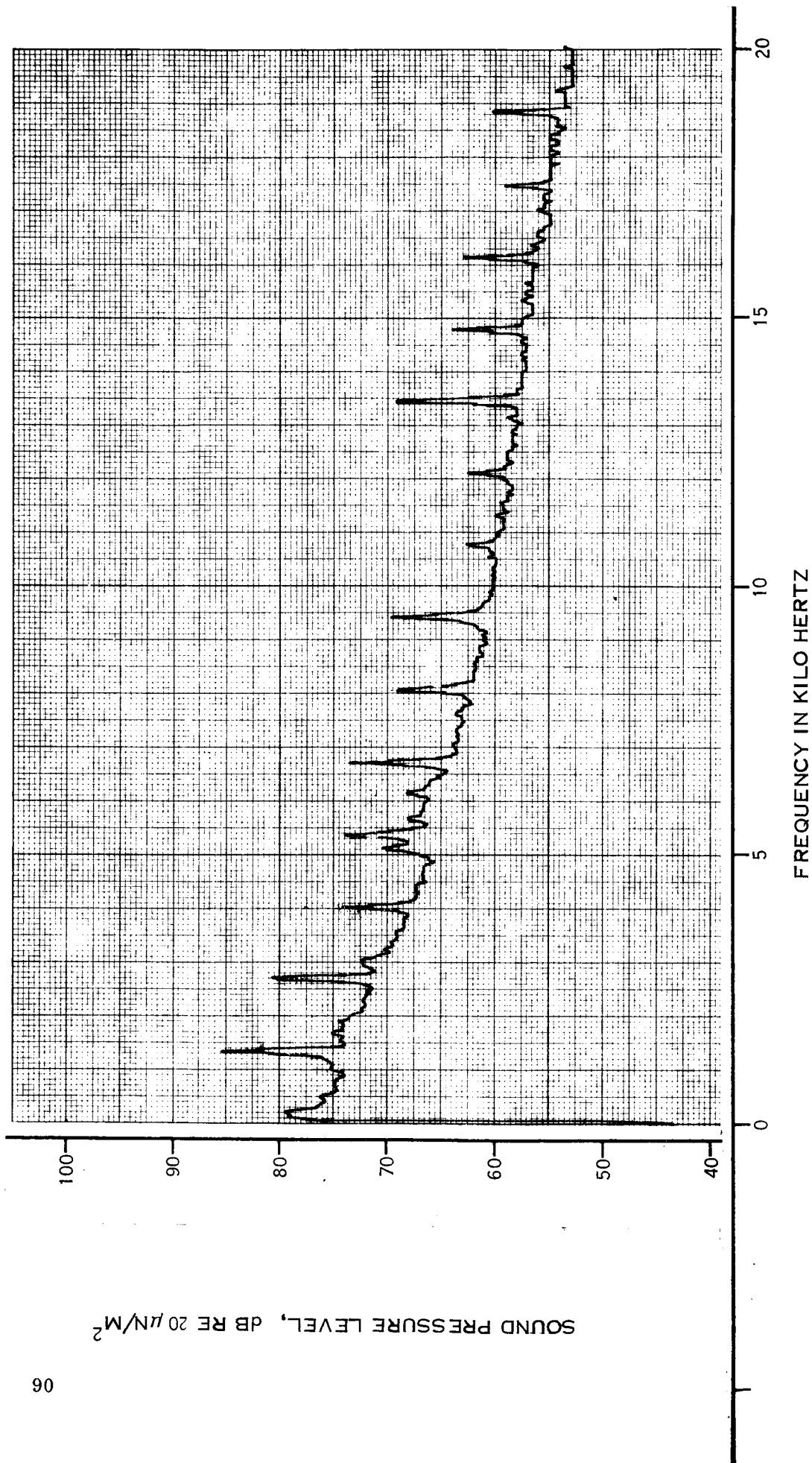
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)



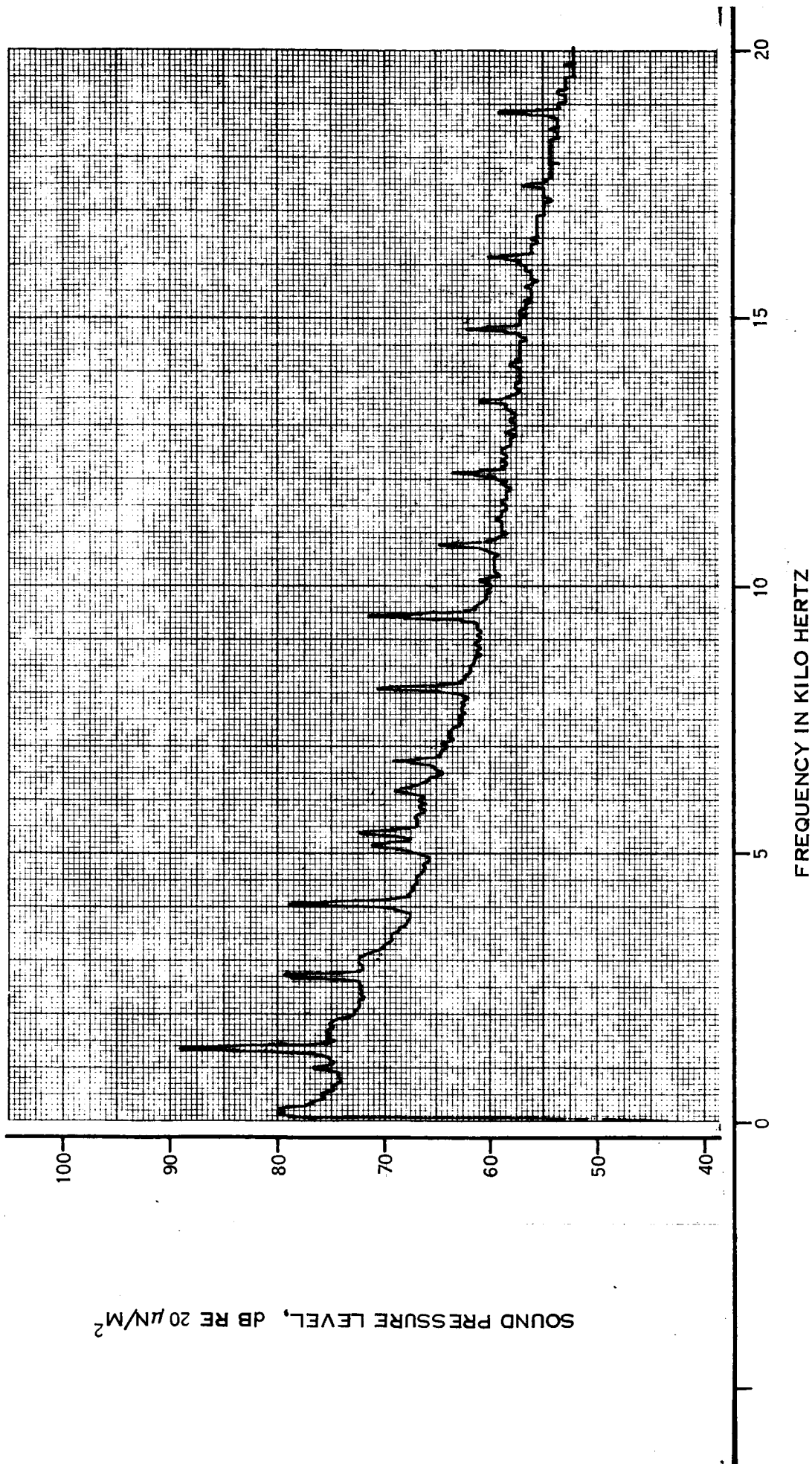
BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2



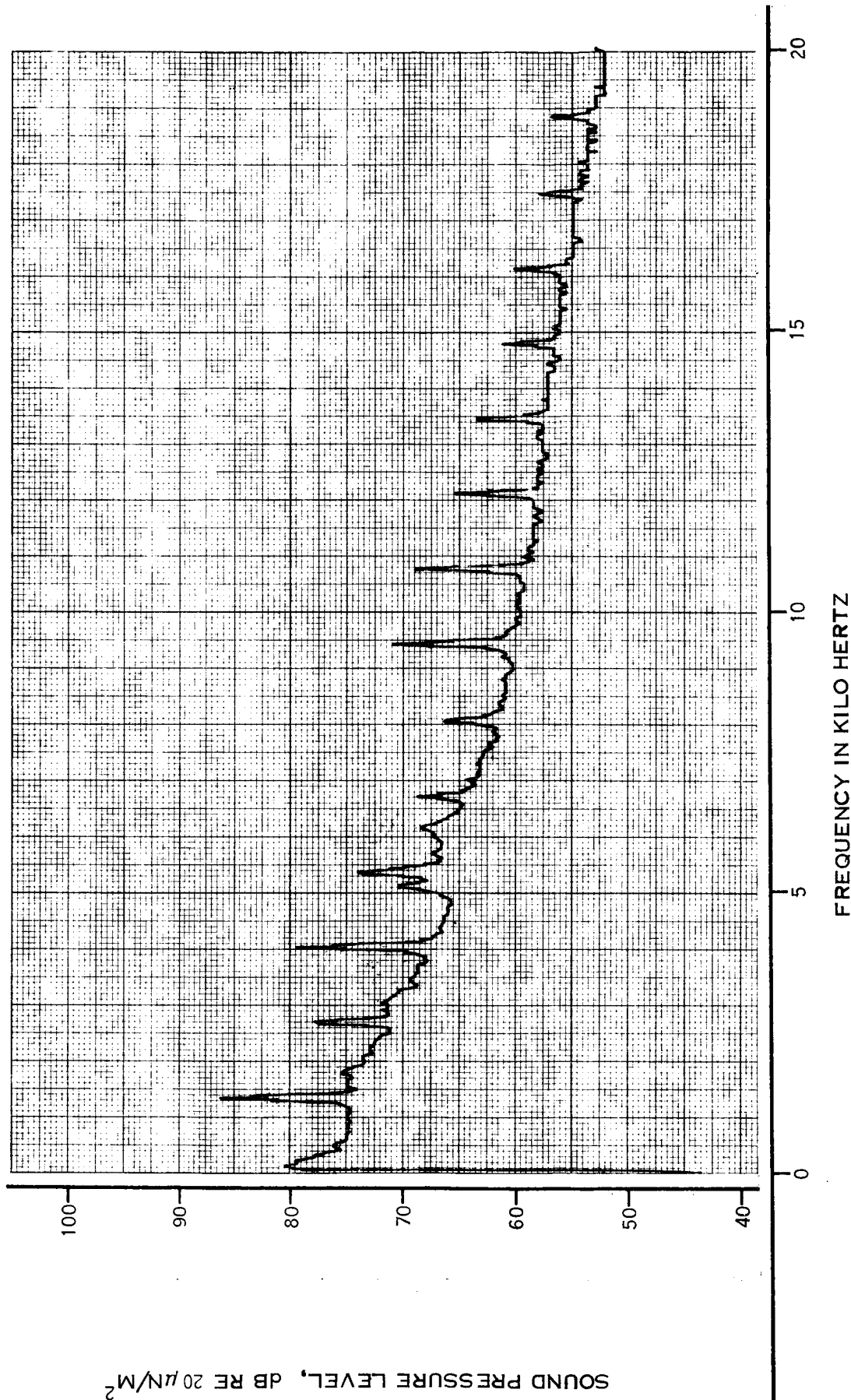
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)

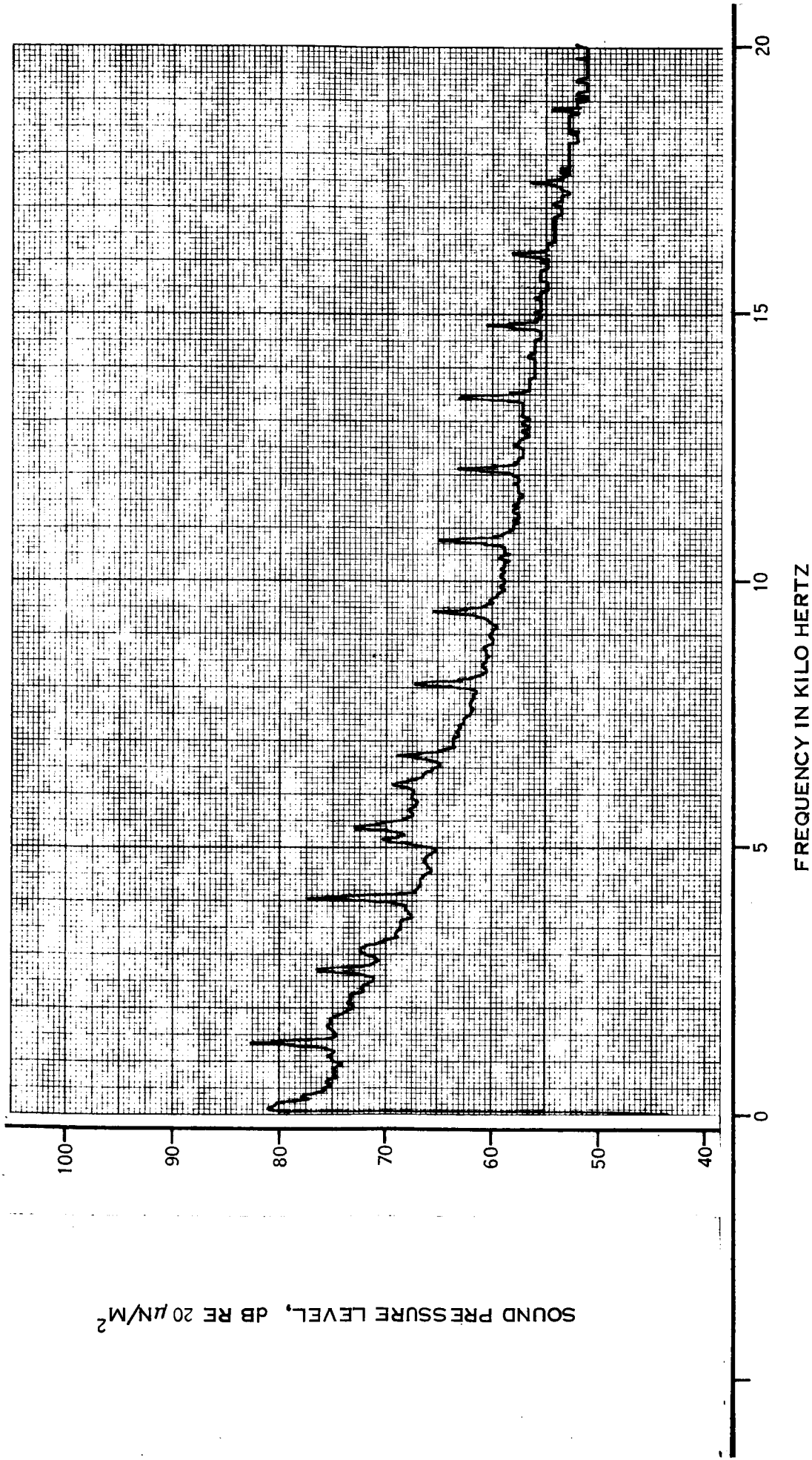


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

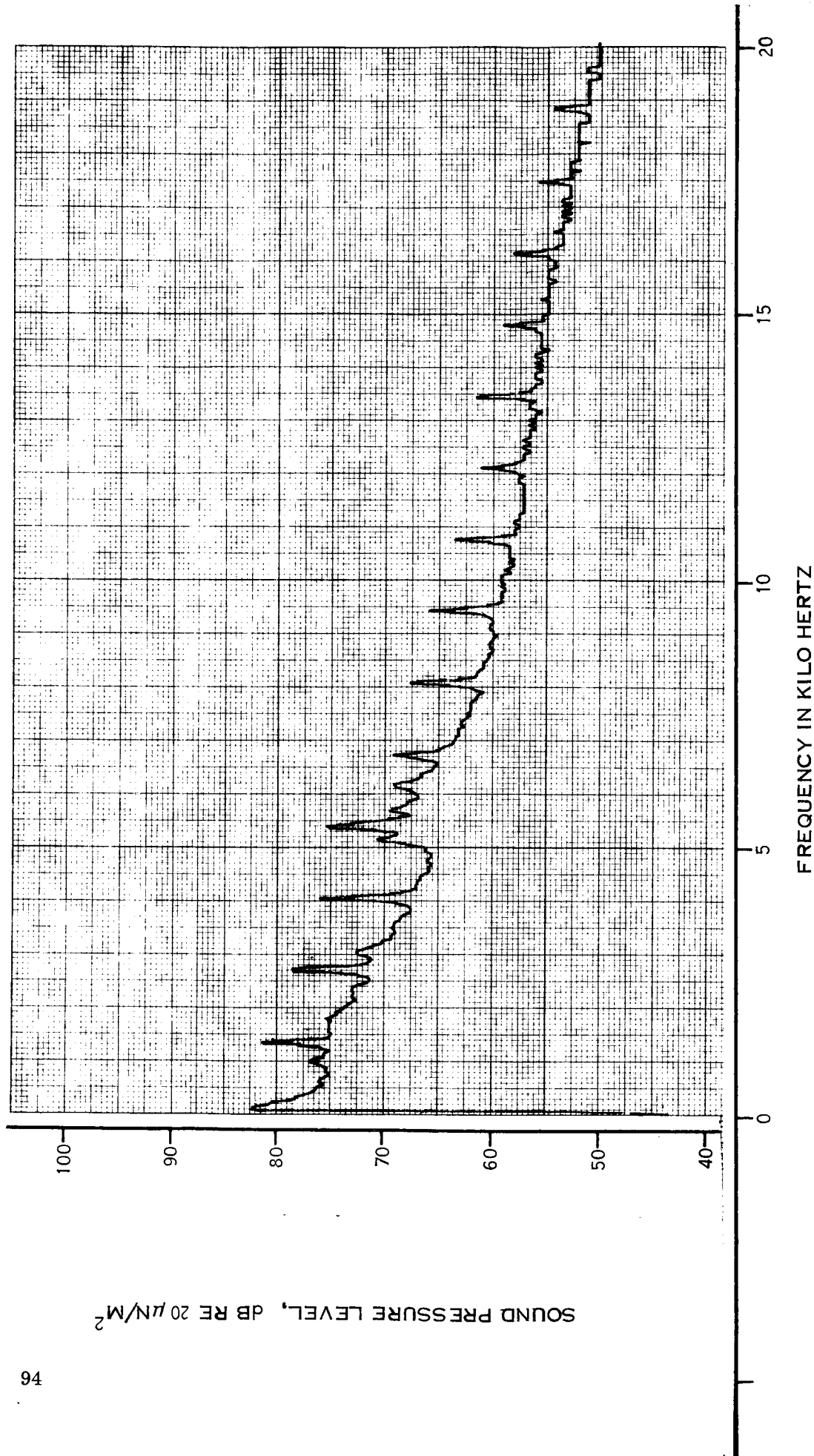
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MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

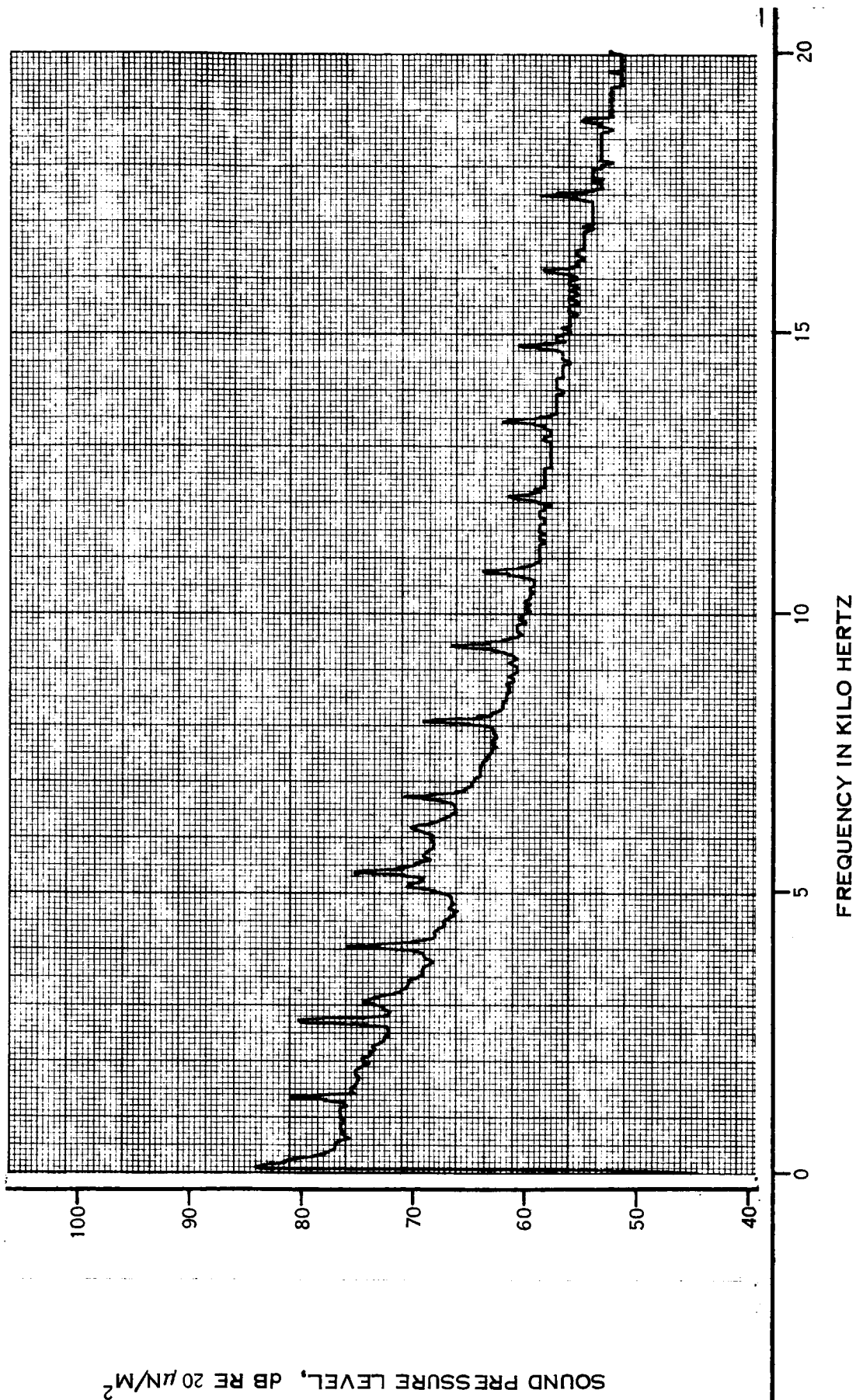


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

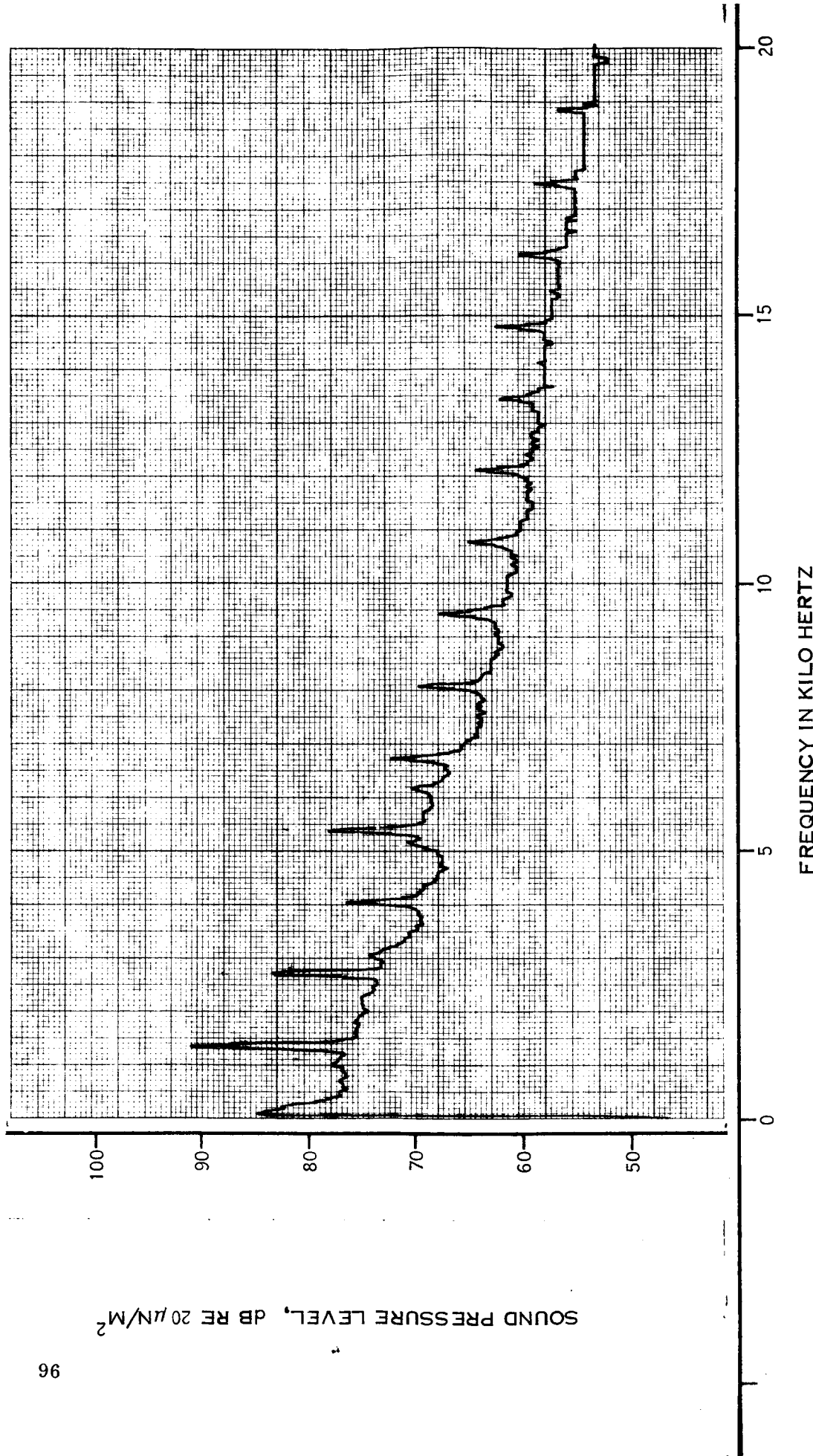
NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2



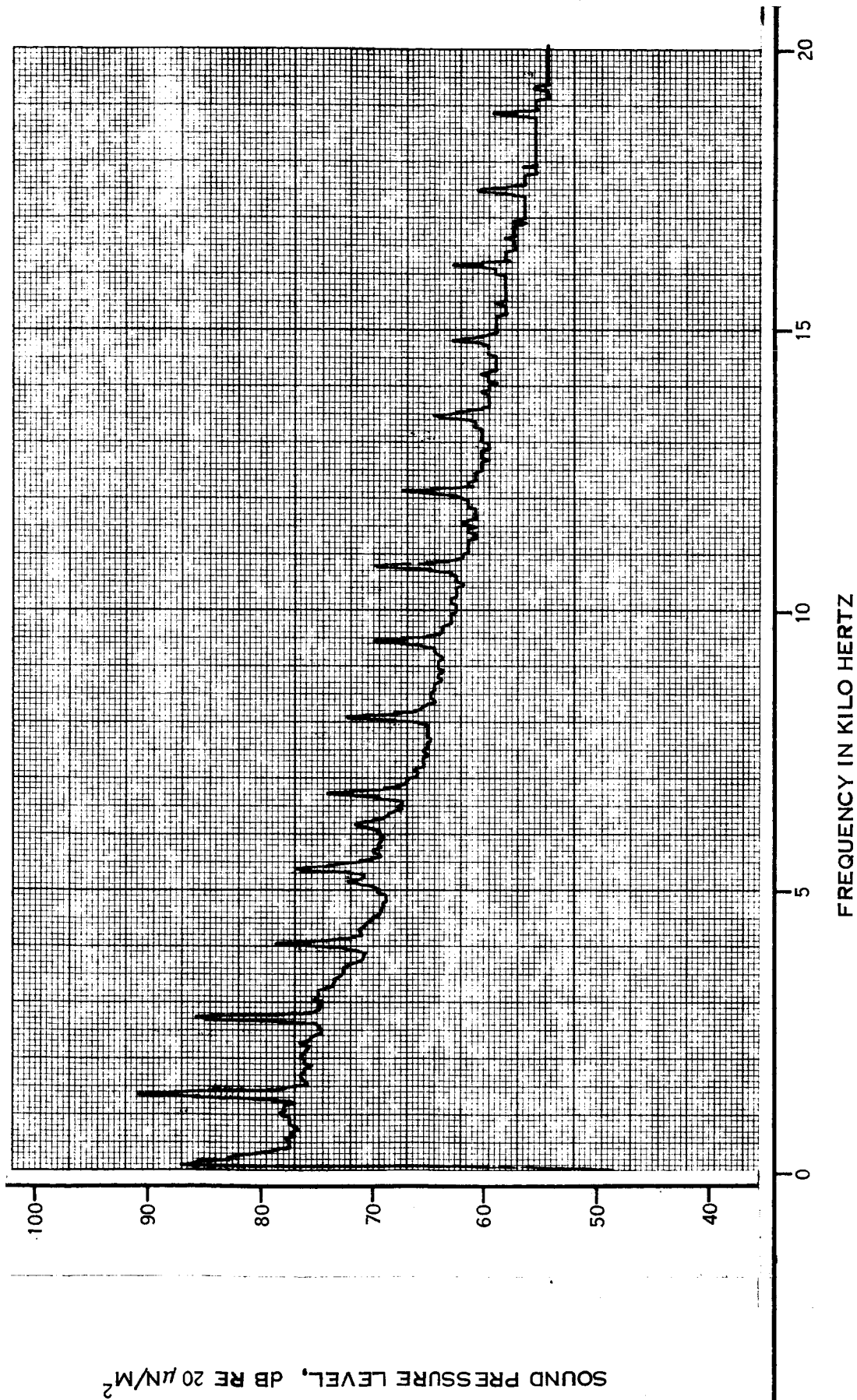
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 100 DEGREES AZIMUTH, 7.62 M (25 FT)



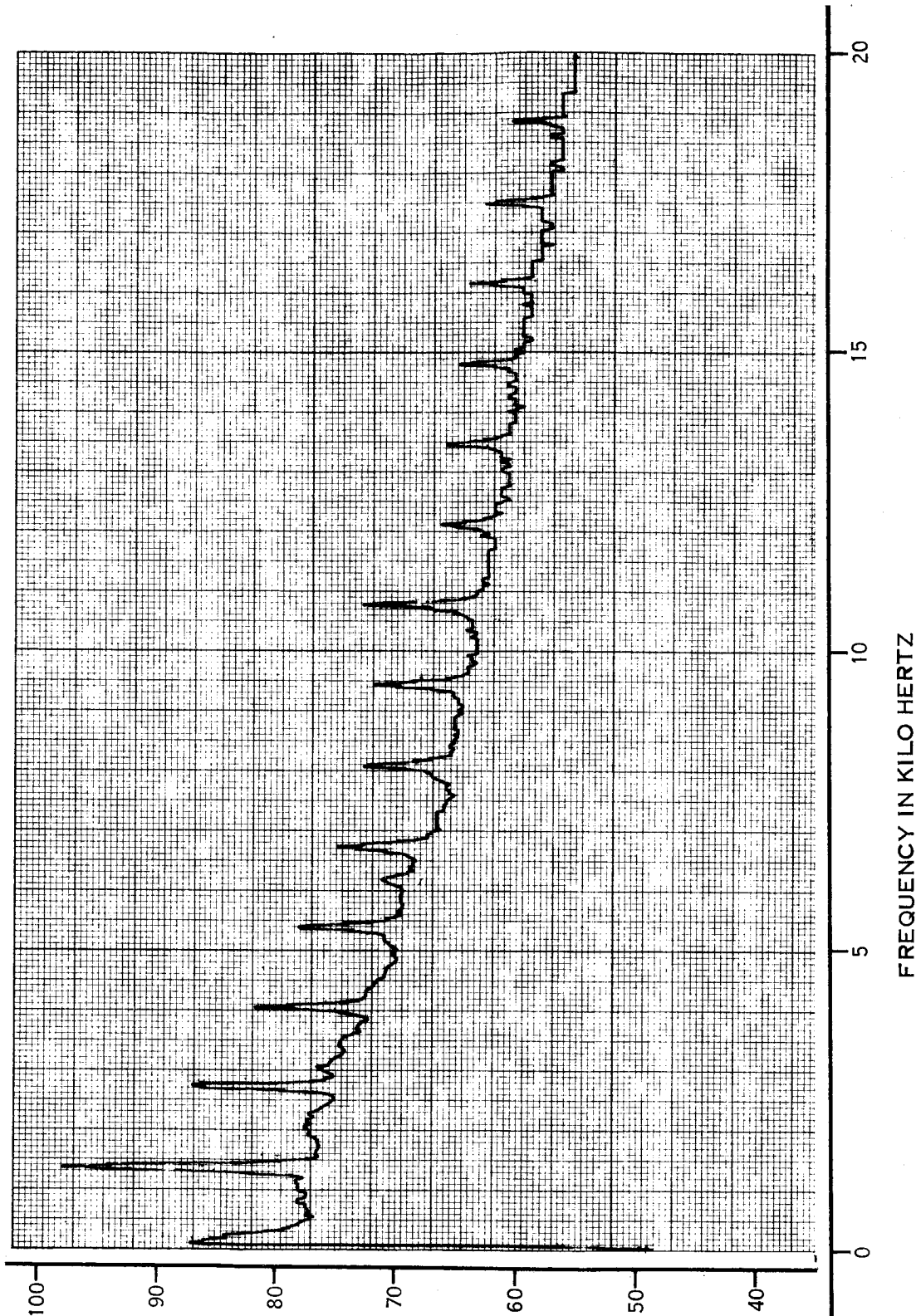
ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2



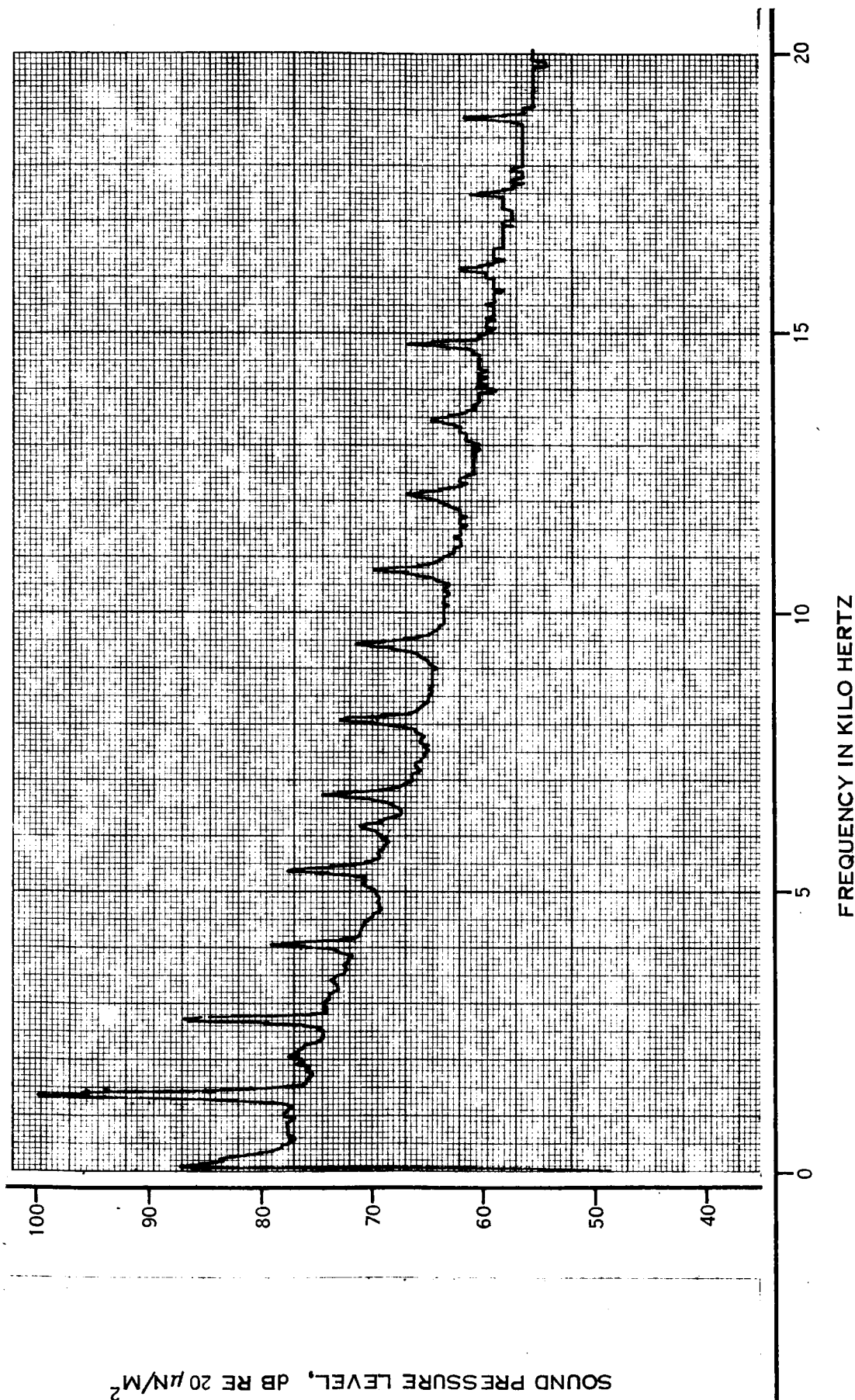
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)



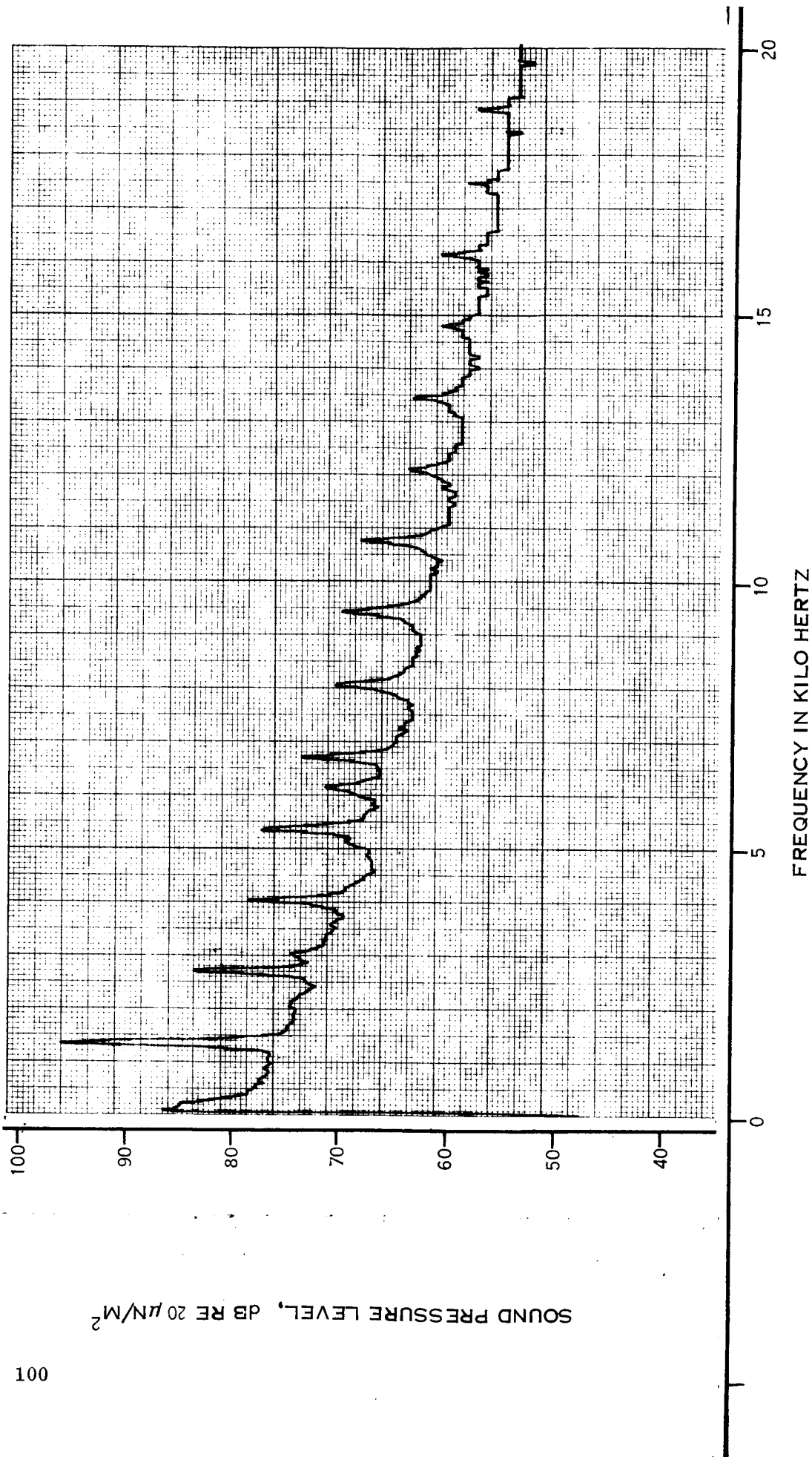
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



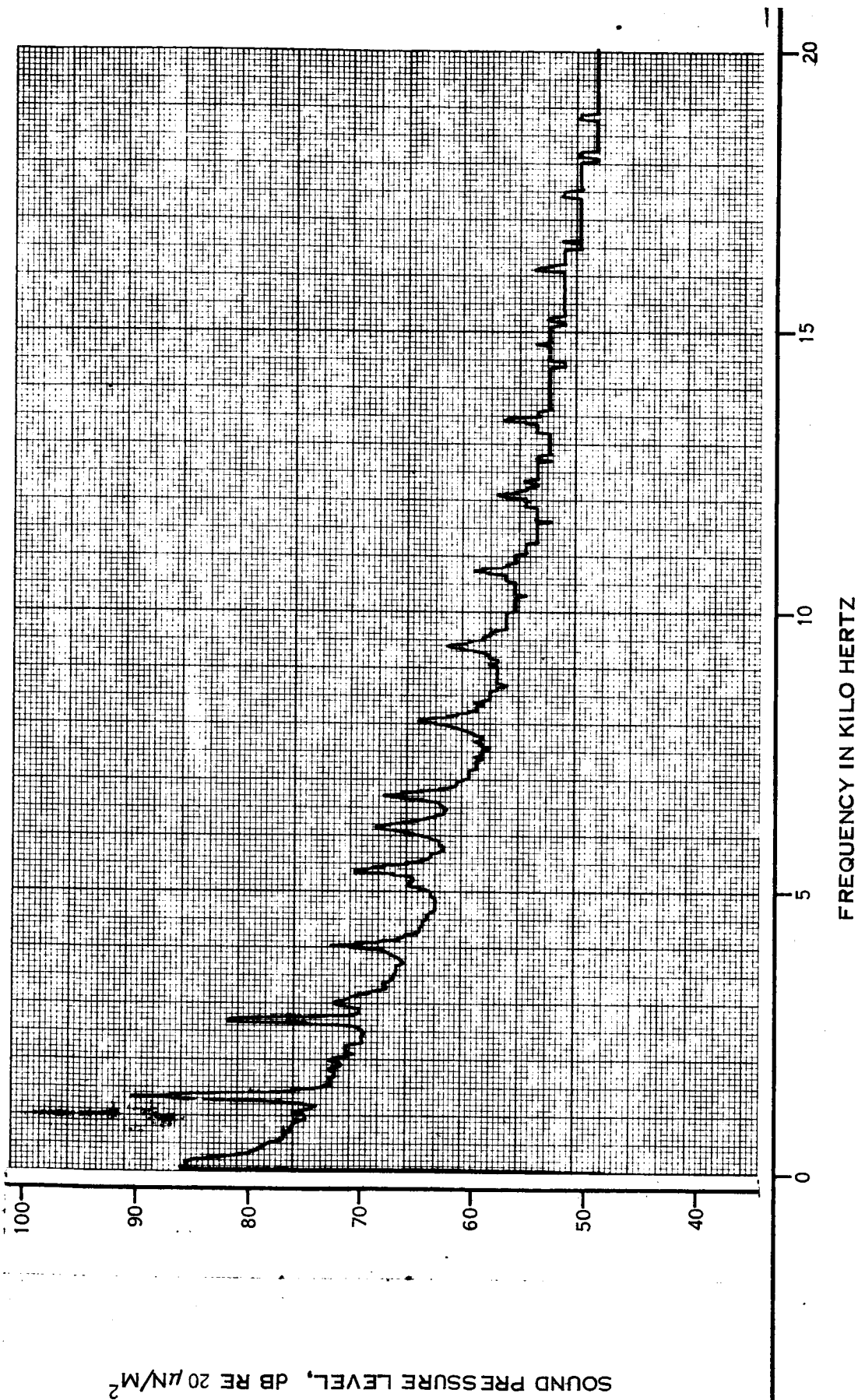
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)



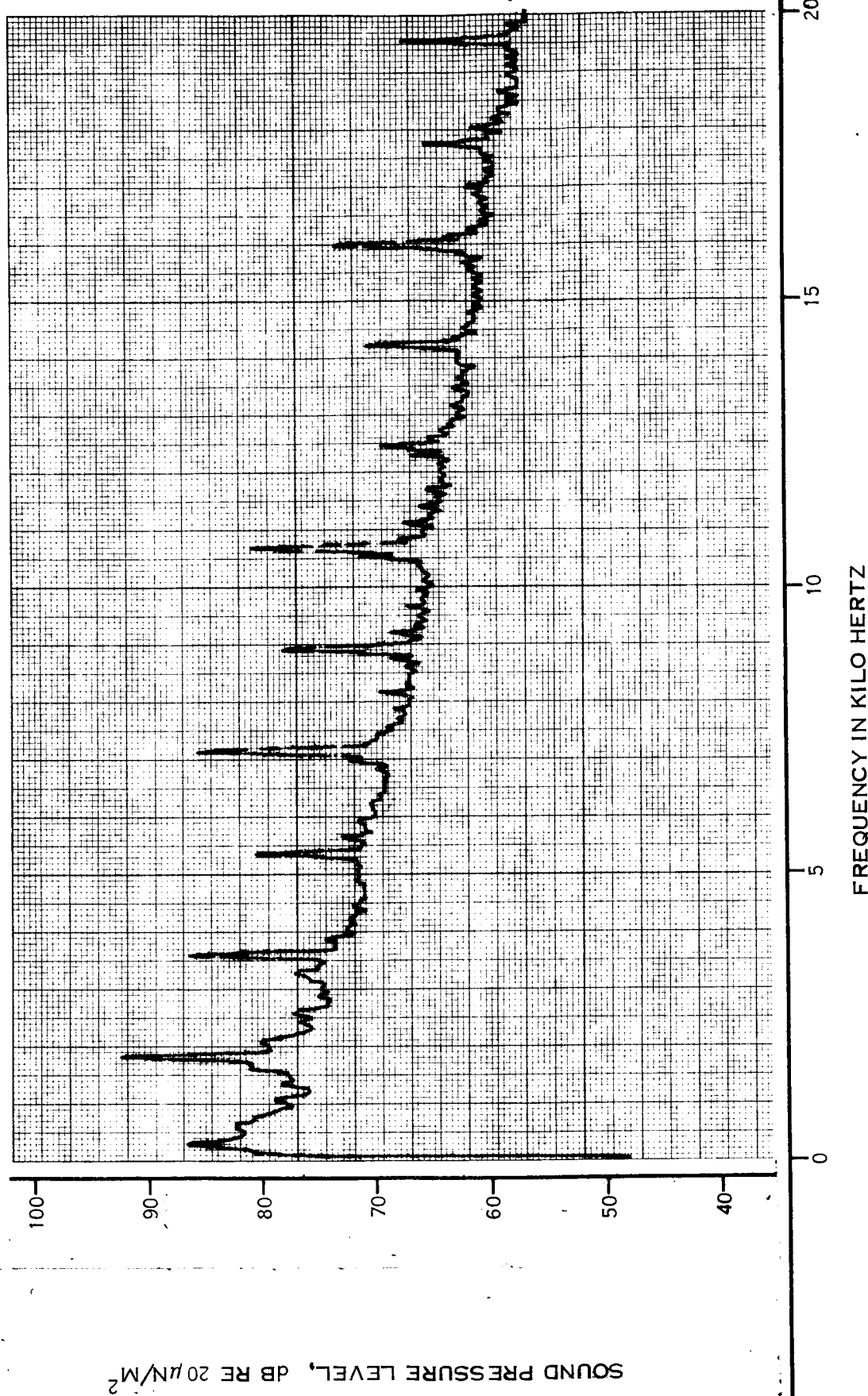
BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
MICROPHONE LOCATION: 140 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2



BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 159 M/SEC (521 FT/SEC)  
101 MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 2

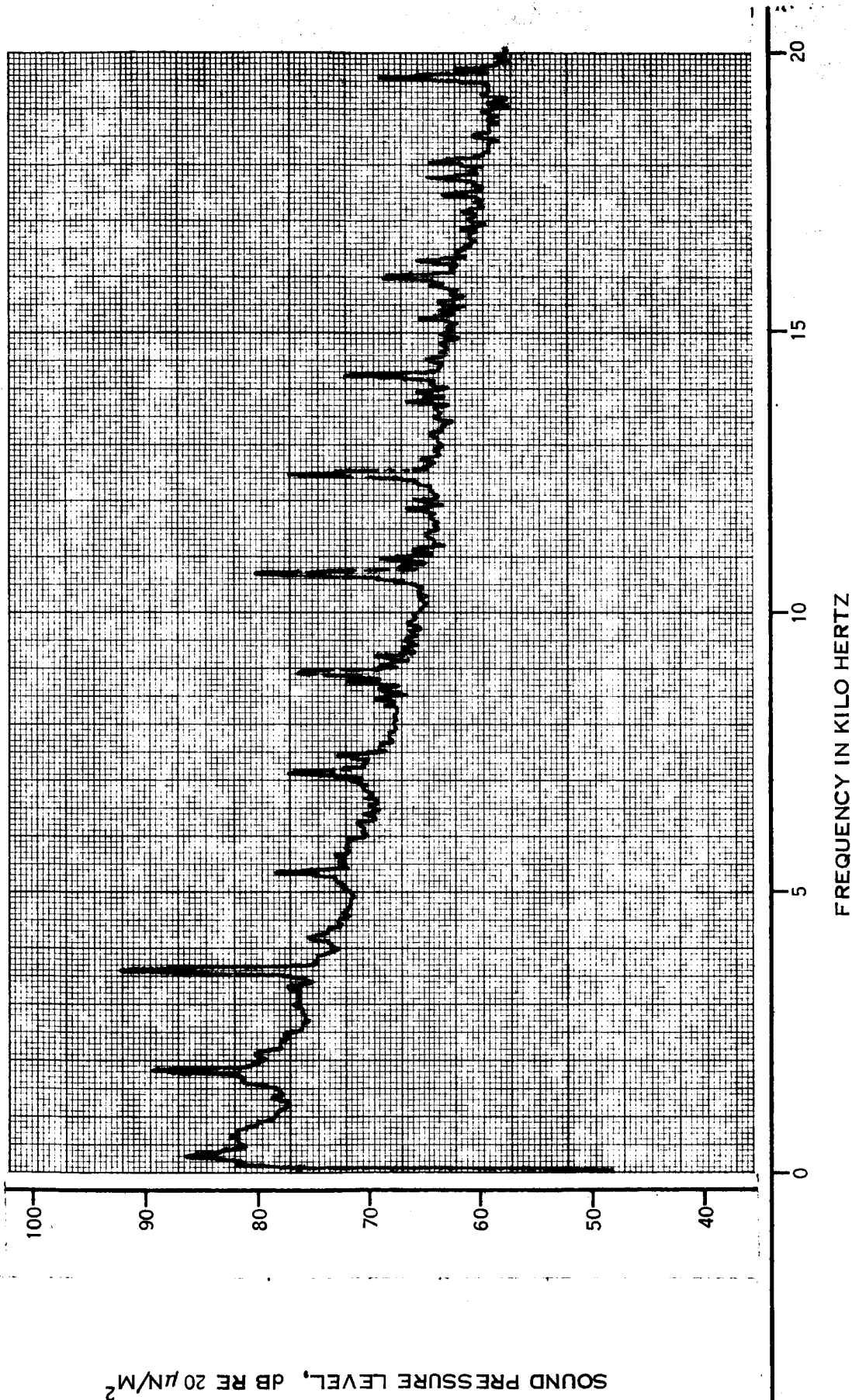


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 8 DEGREES AZIMUTH, 7.62 M (25 FT)

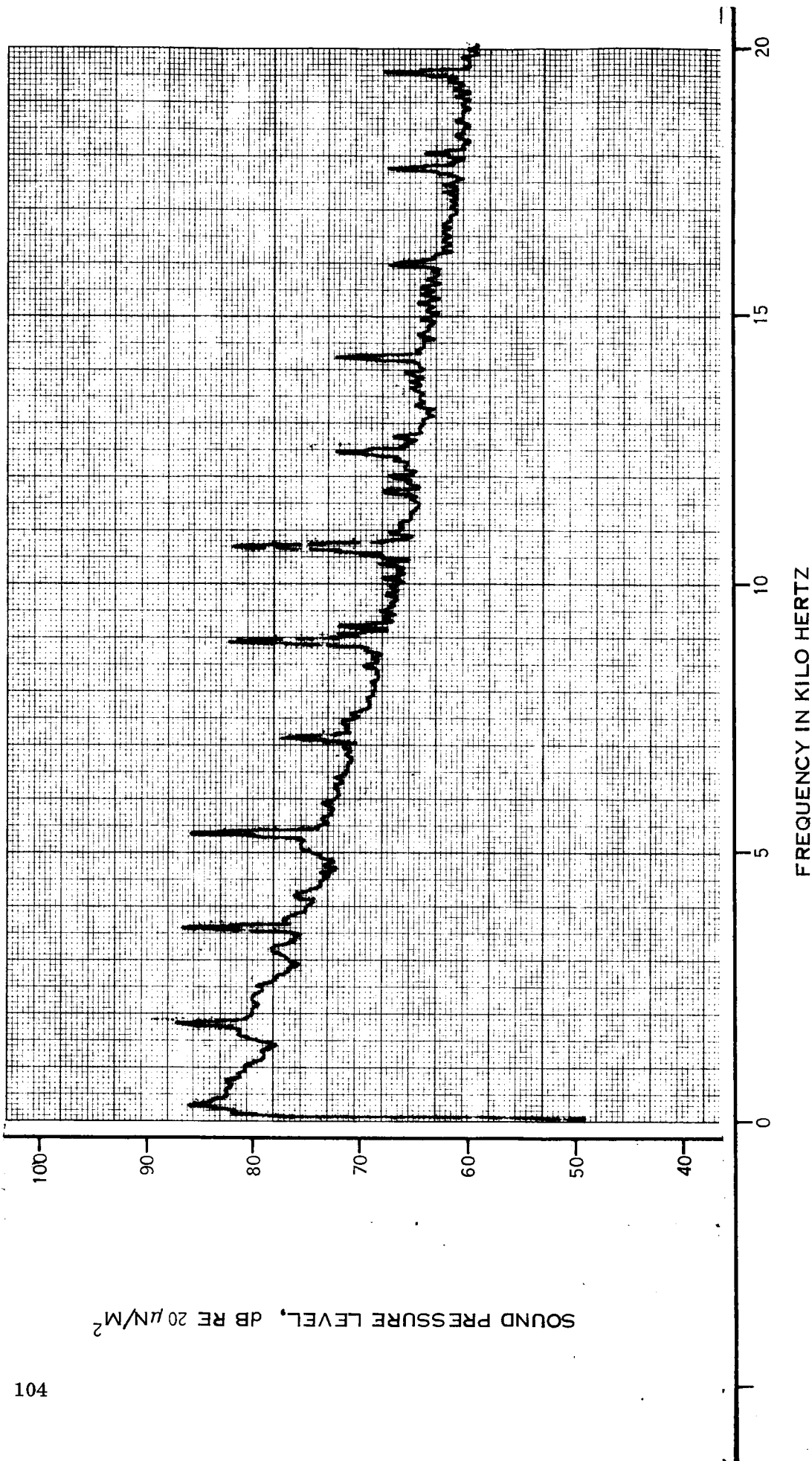
NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 57.4 DEGREES  
15 TIP SPEED: 210 M/SEC (688 FT/SEC)  
103 MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
256 ENSEMBLES  
TEST CONDITION NUMBER: 5



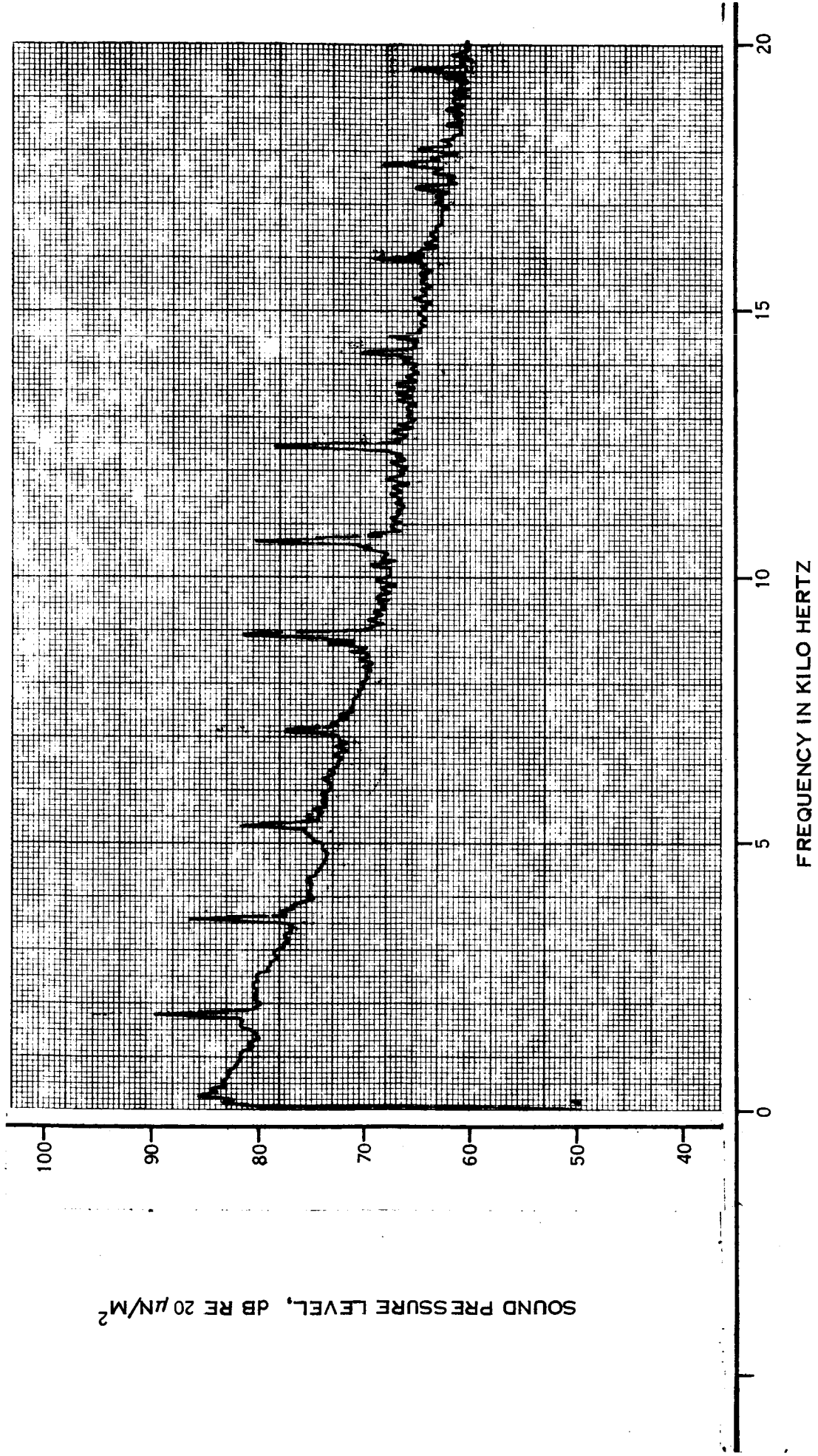
BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5



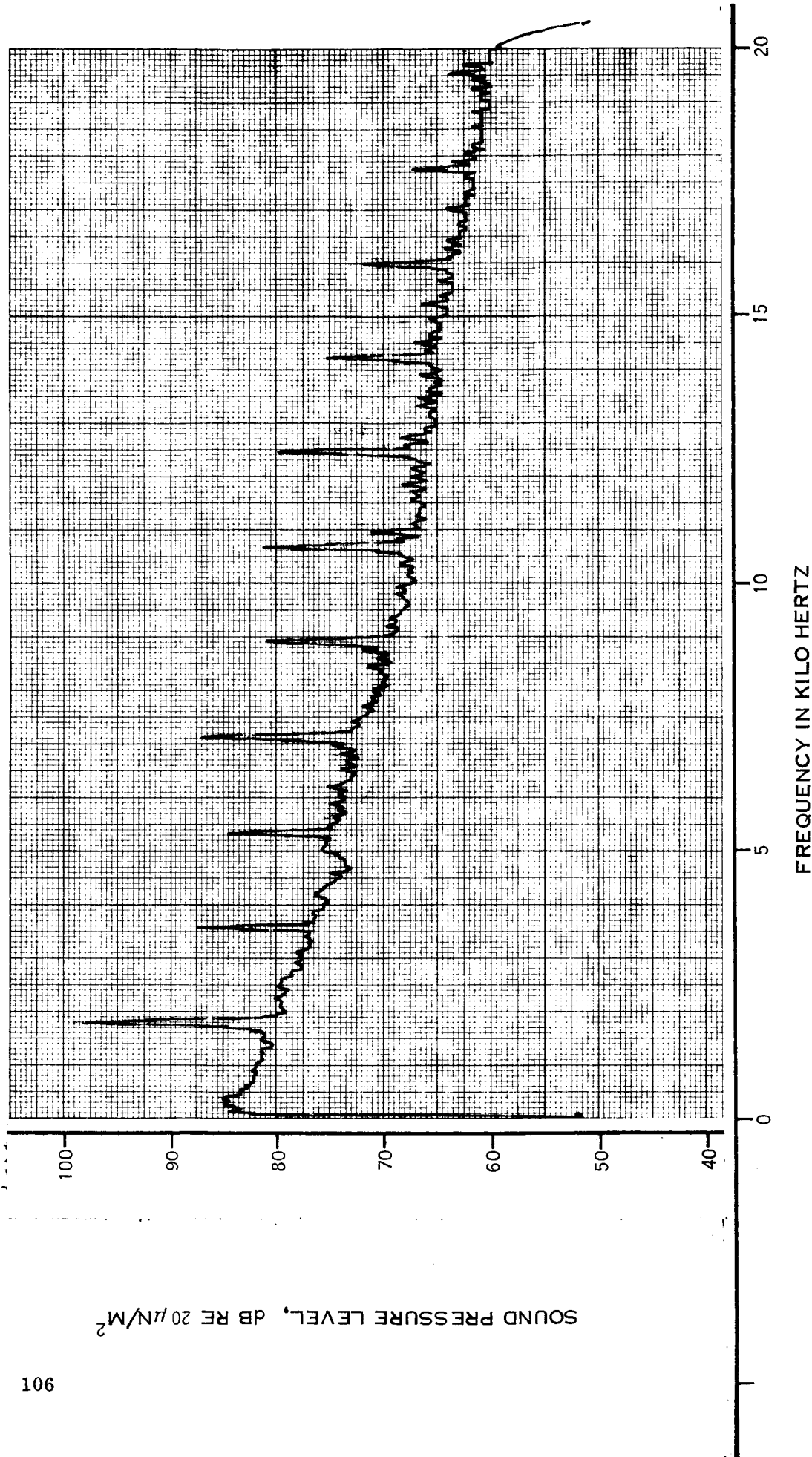
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5



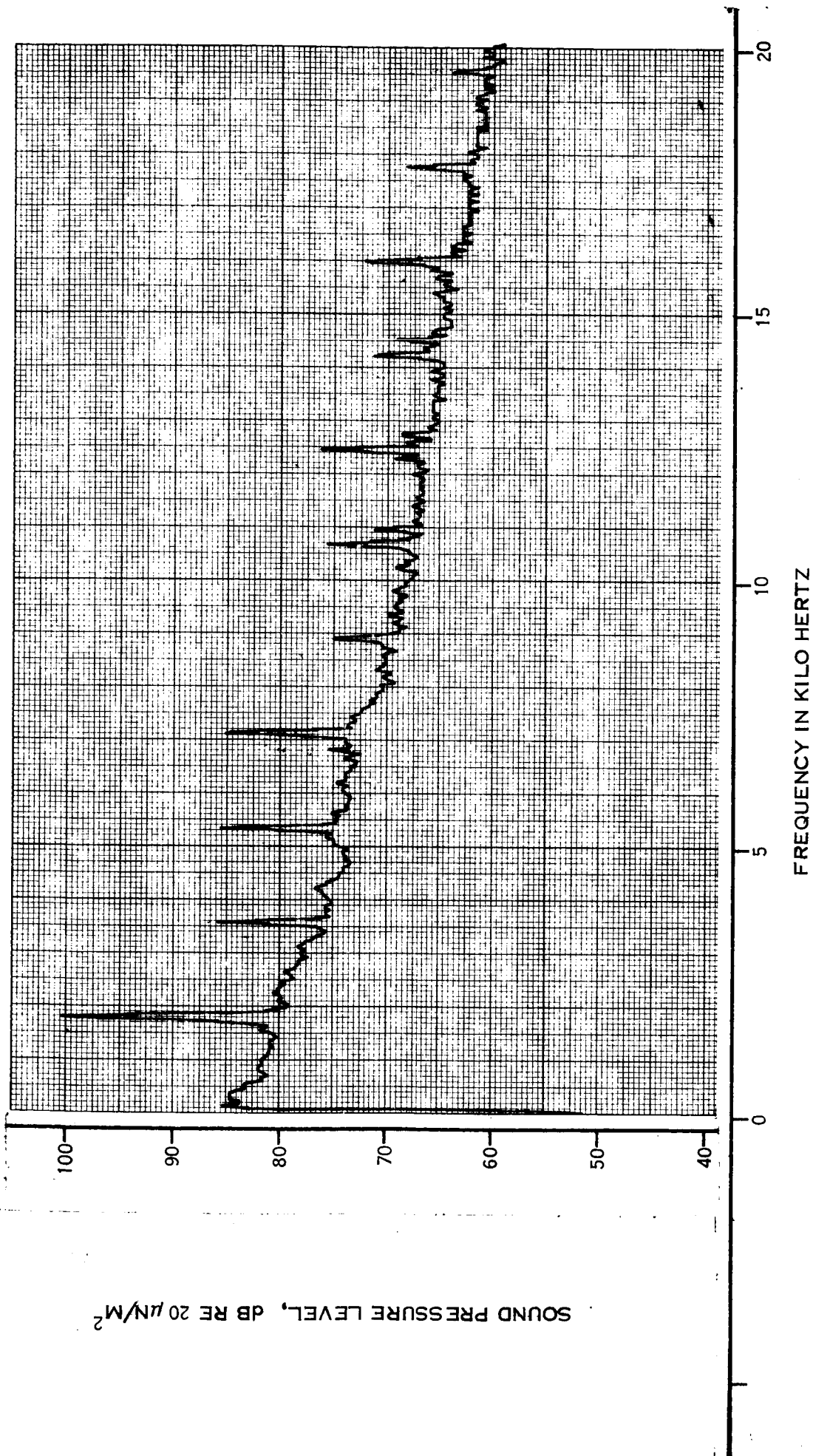
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)



NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.

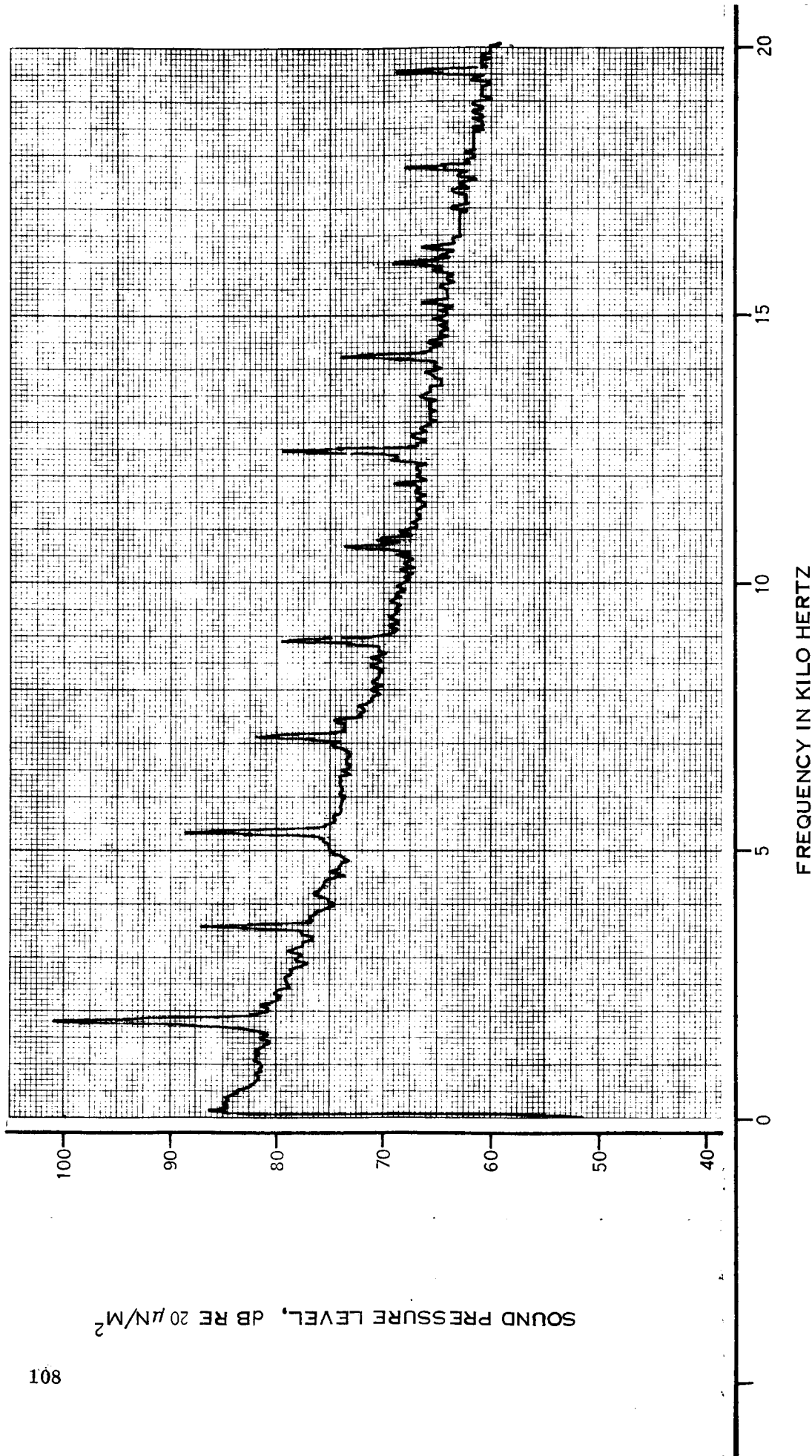


BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
256 ENSEMBLES  
TEST CONDITION NUMBER: 5

EUGENE DIETZGEN CO  
MADE IN U.S.A.

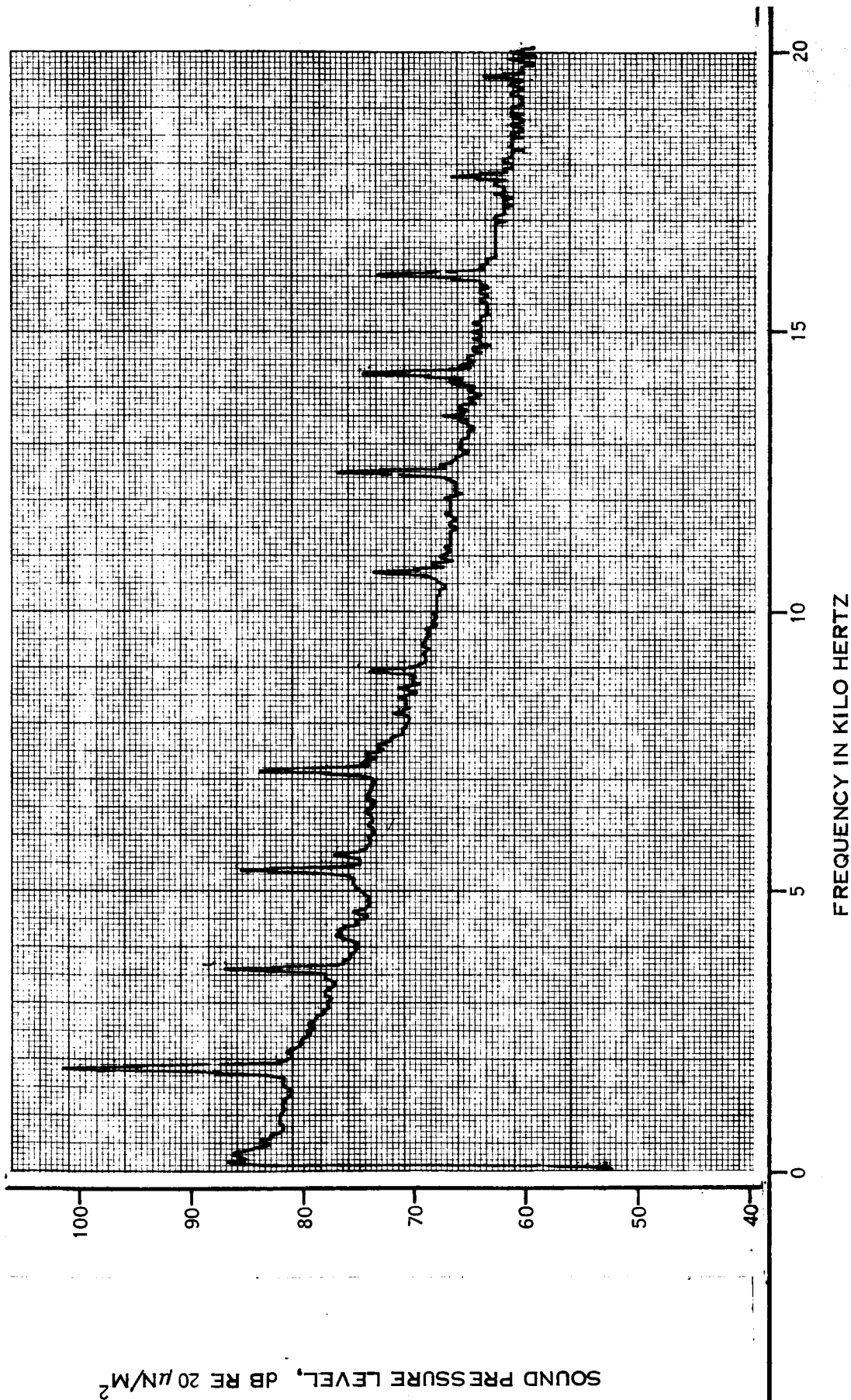
NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

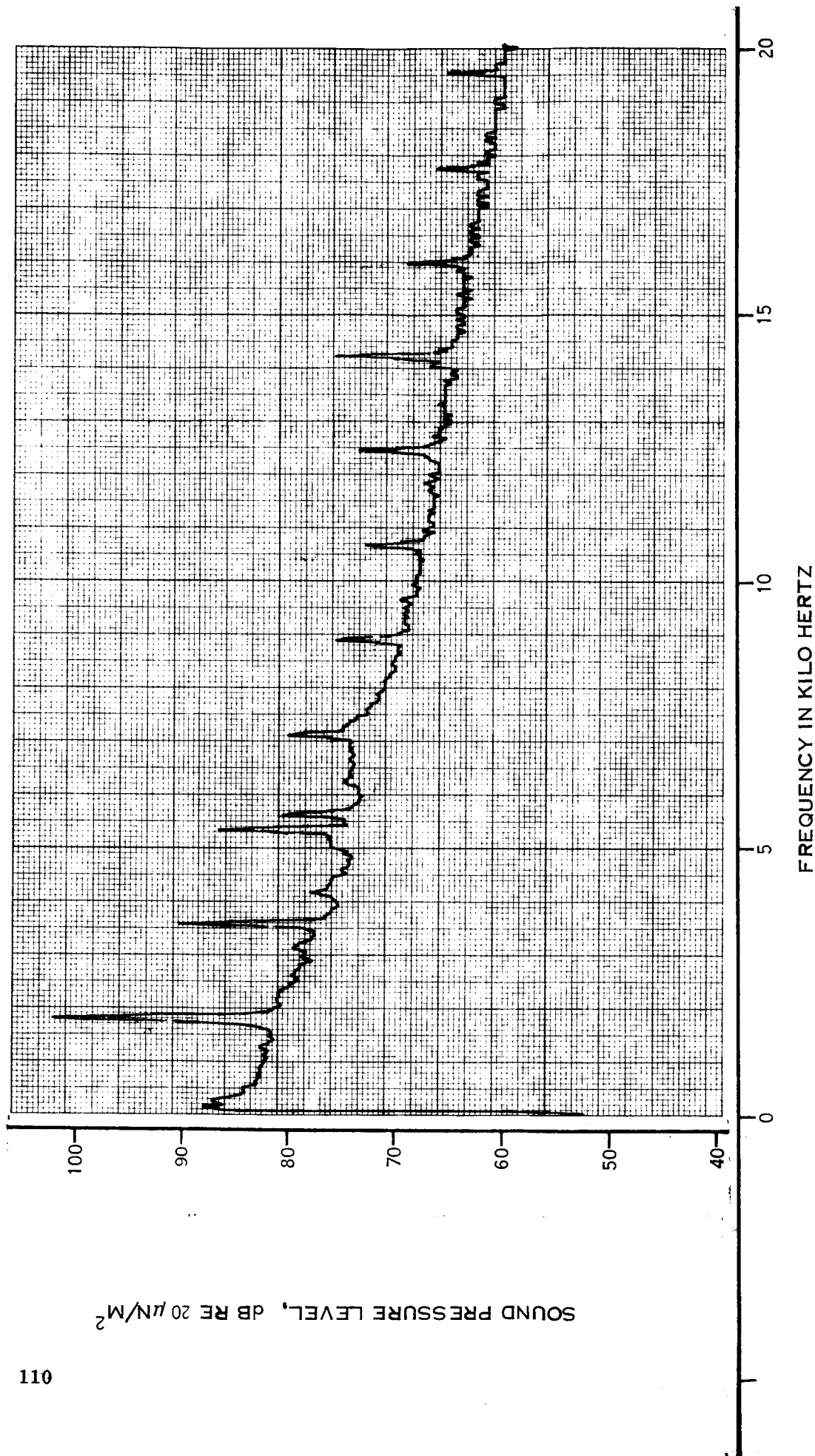
BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER  
EUGENE DIETZGEN CO.  
NEW YORK, N. Y. U. S. A.



BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

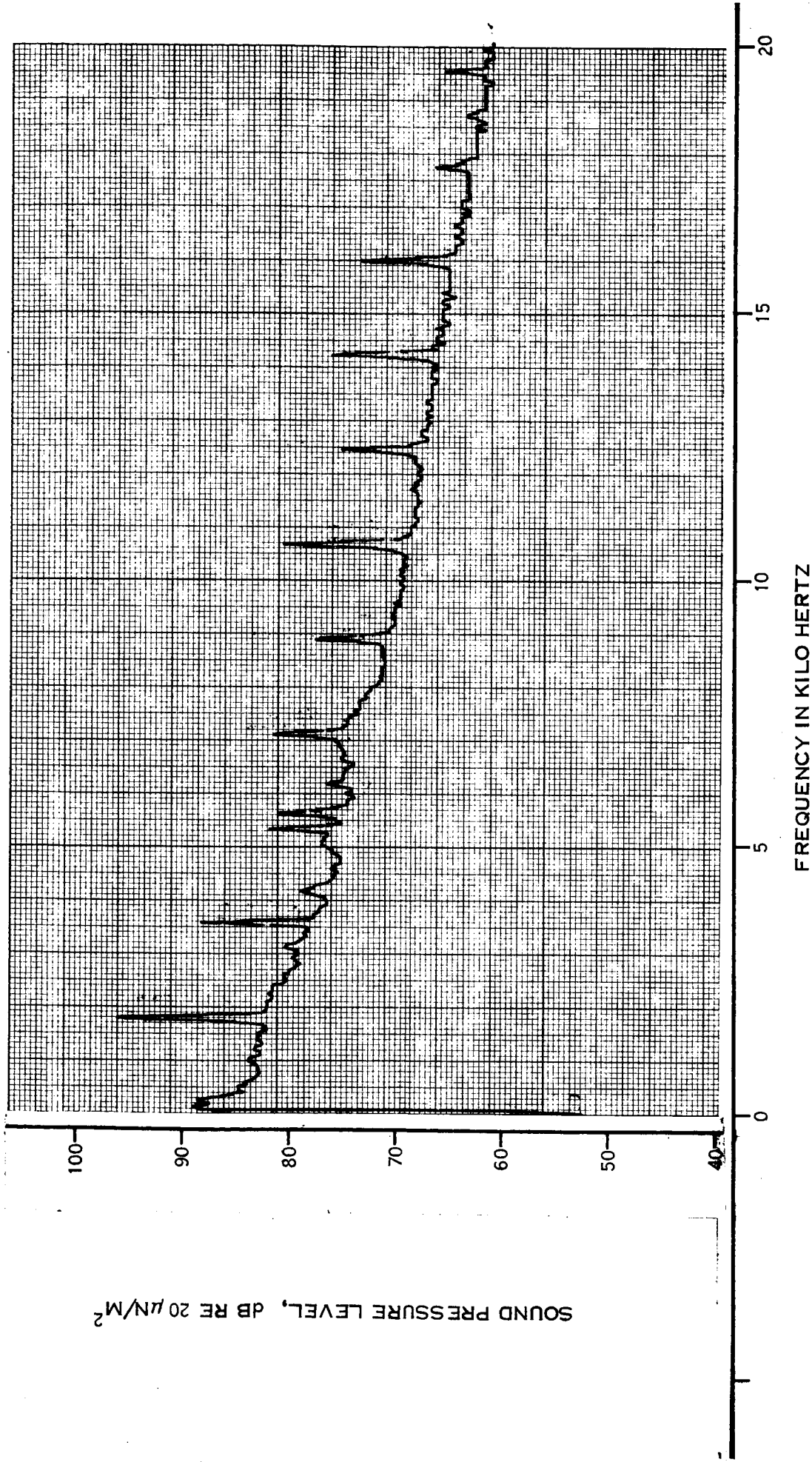


BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 57.4 DEGREES

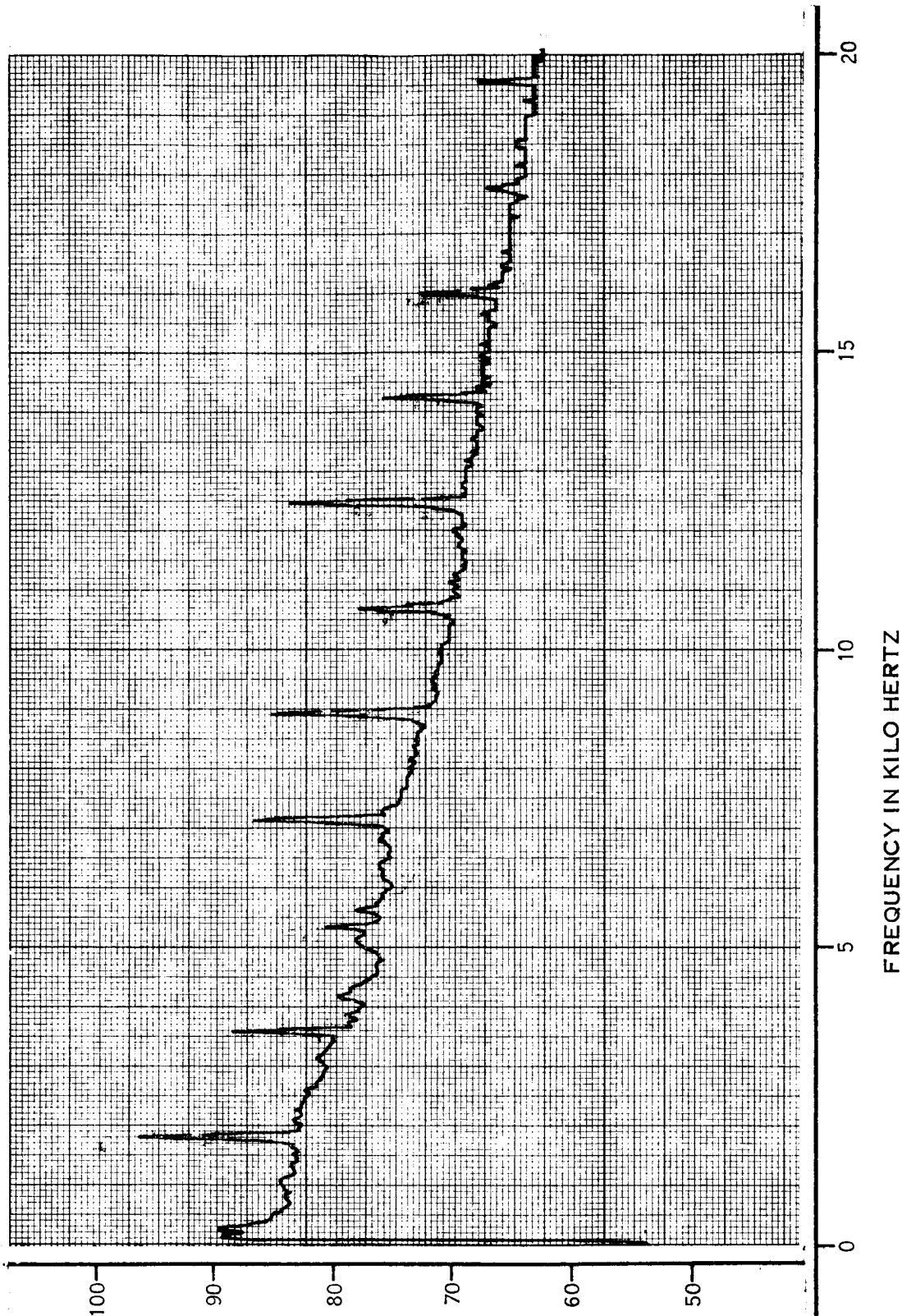
TIP SPEED: 210 M/SEC (688 FT/SEC)

MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5



SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N/M}^2$

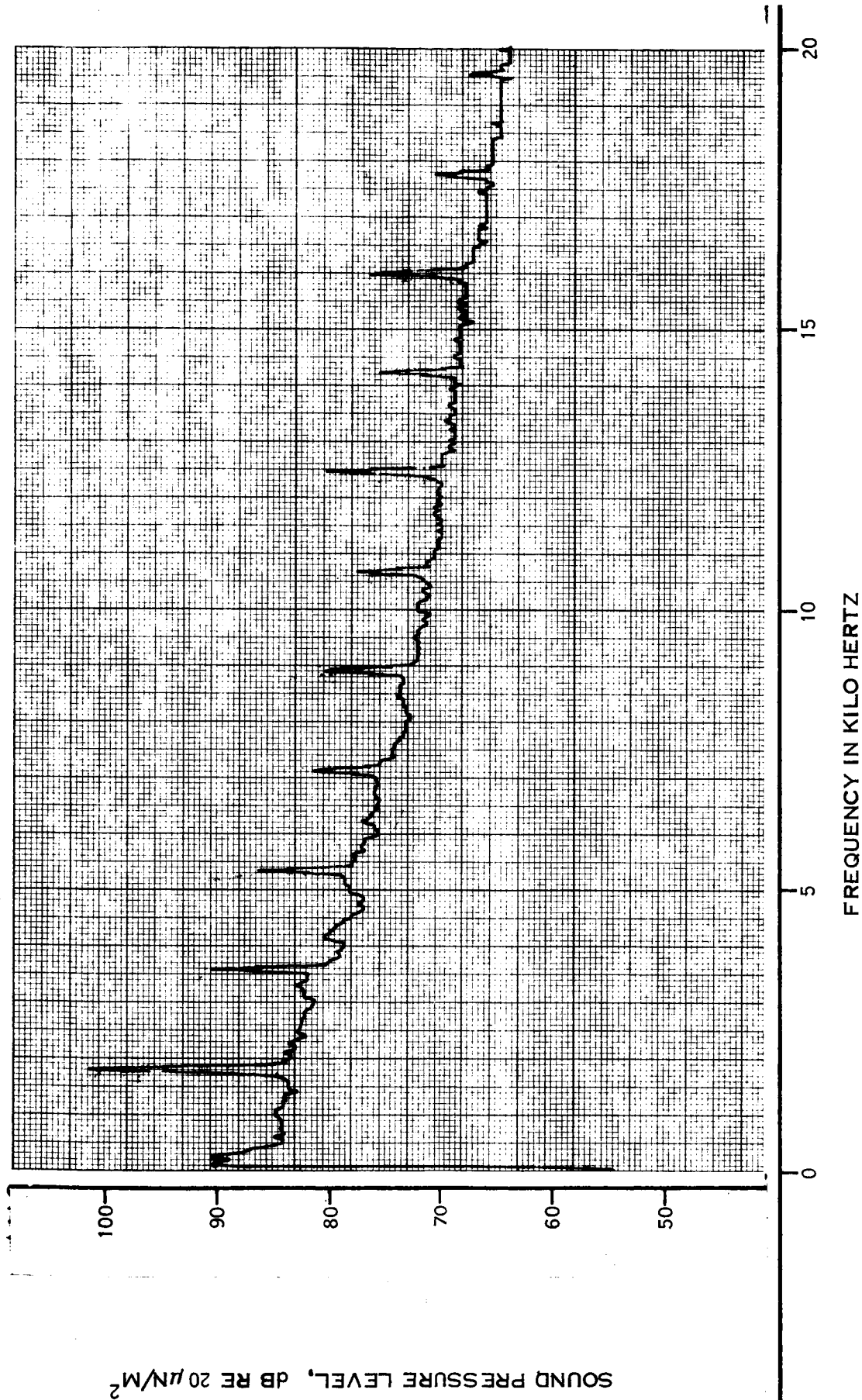


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 100 DEGREES AZIMUTH, 7.62 M (25 FT)

ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

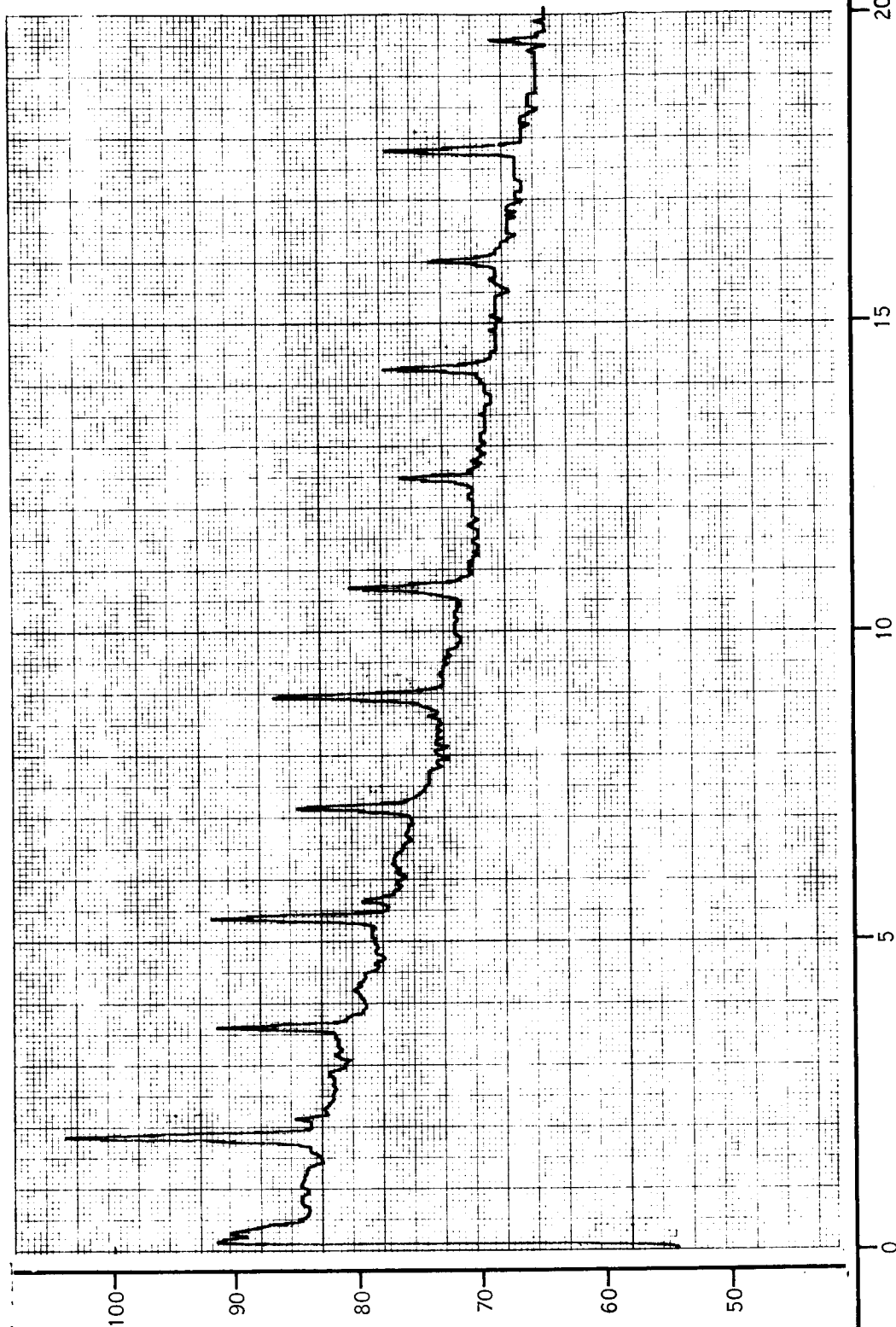
EUGENE DIETZGEN CO.  
MADE IN U. S. A.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
113 MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)

SOUND PRESSURE LEVEL, DB RE 20  $\mu$ N/M<sup>2</sup>



FREQUENCY IN KILO HERTZ

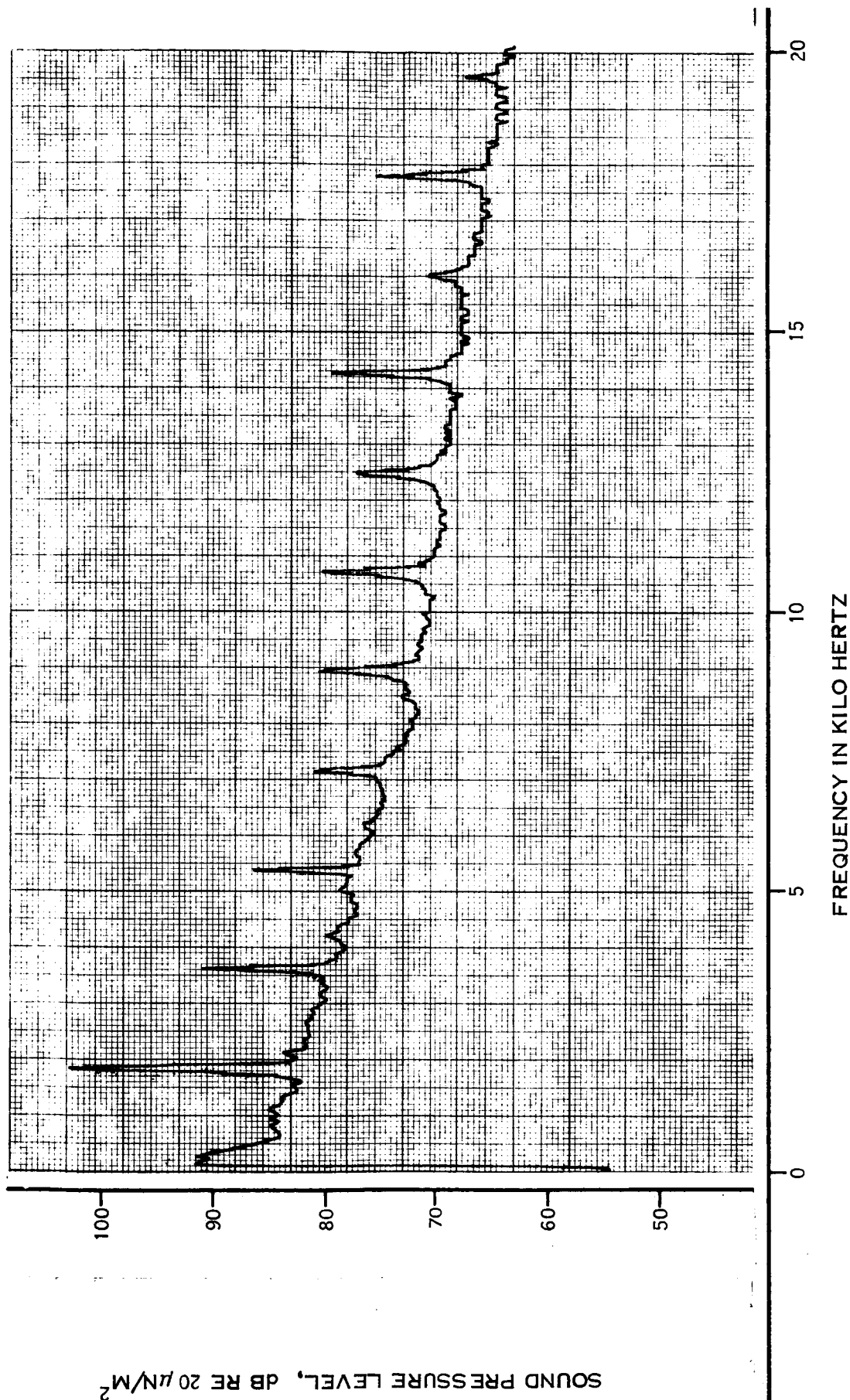
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)



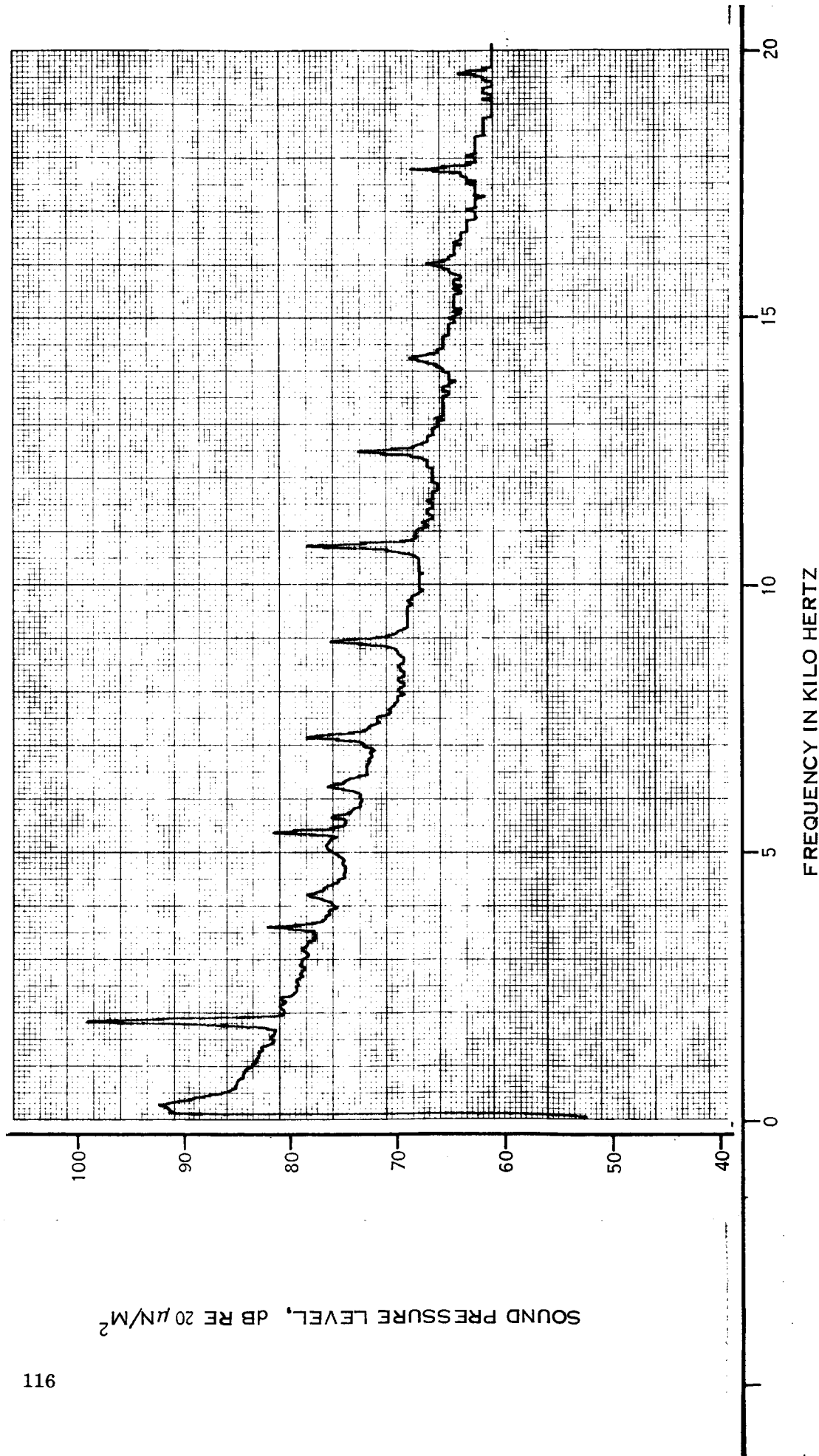
EUGENE DIETZGEN CO.  
MADE IN U. S. A.

NO. 340-M DIEZGEN GRAPH PAPER  
MULTIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)

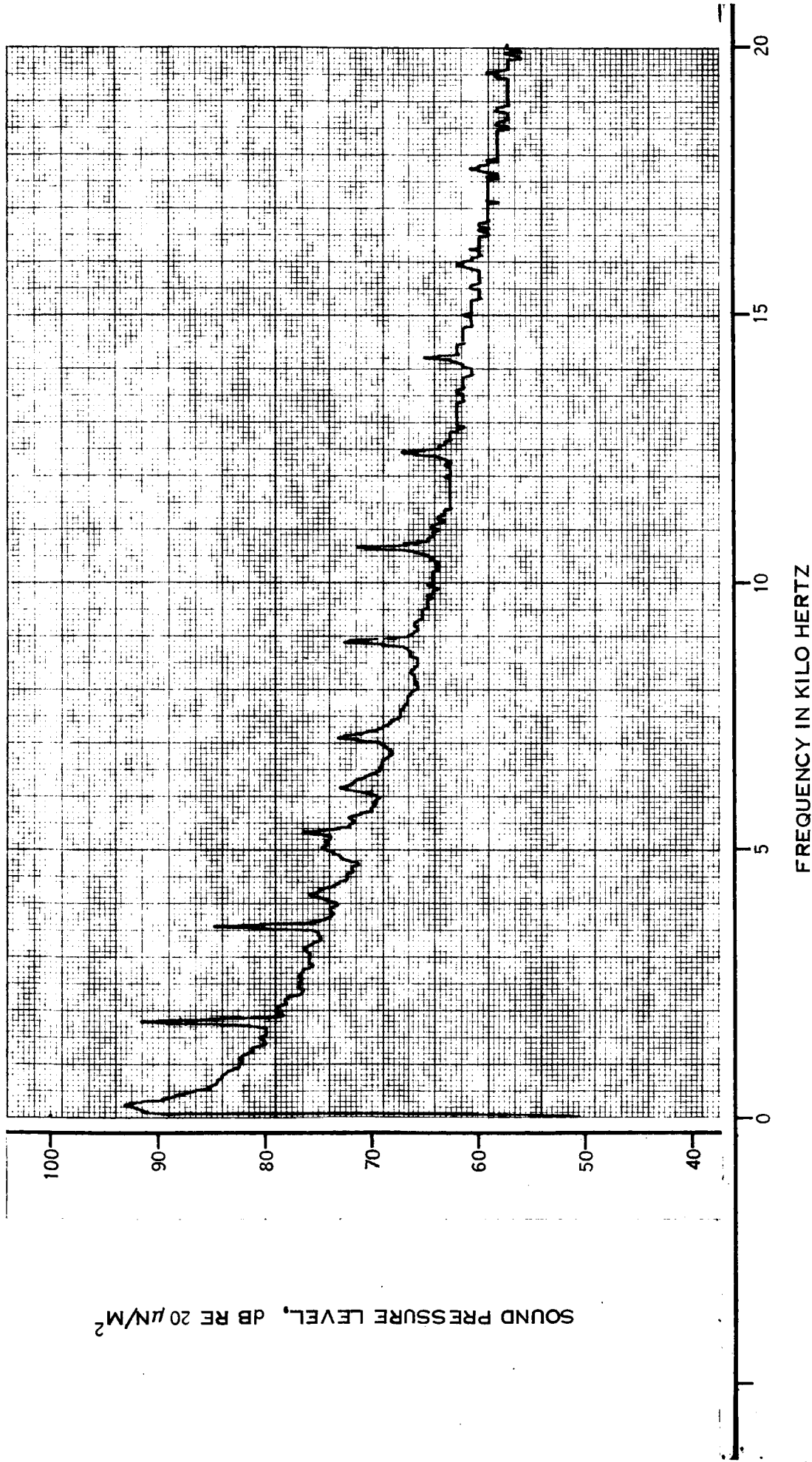


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
MICROPHONE LOCATION: 140 DEGREES AZIMUTH, 7.62 M (25 FT)

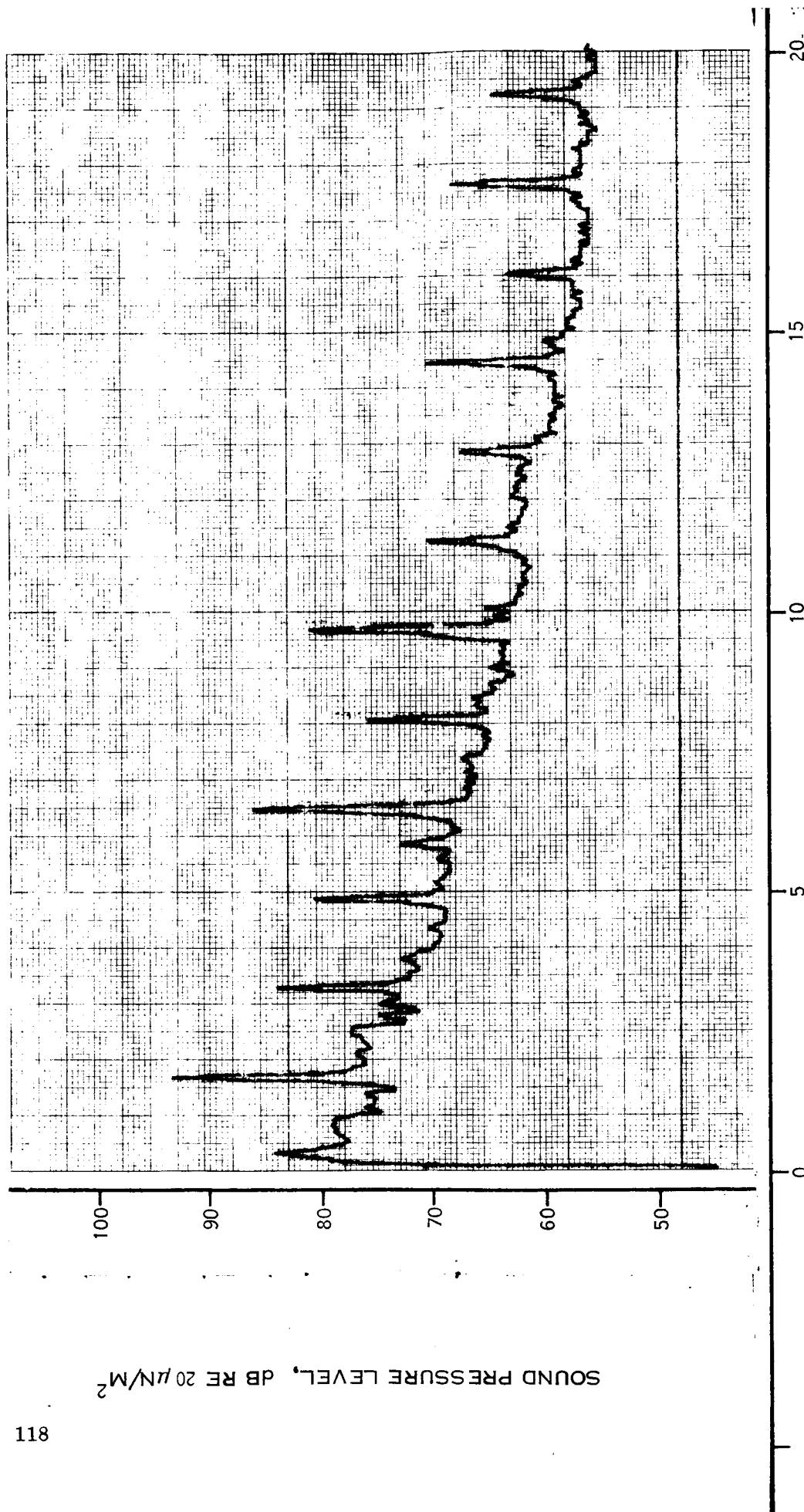
NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER

DIETZGEN CO.  
MADE IN U. S. A.



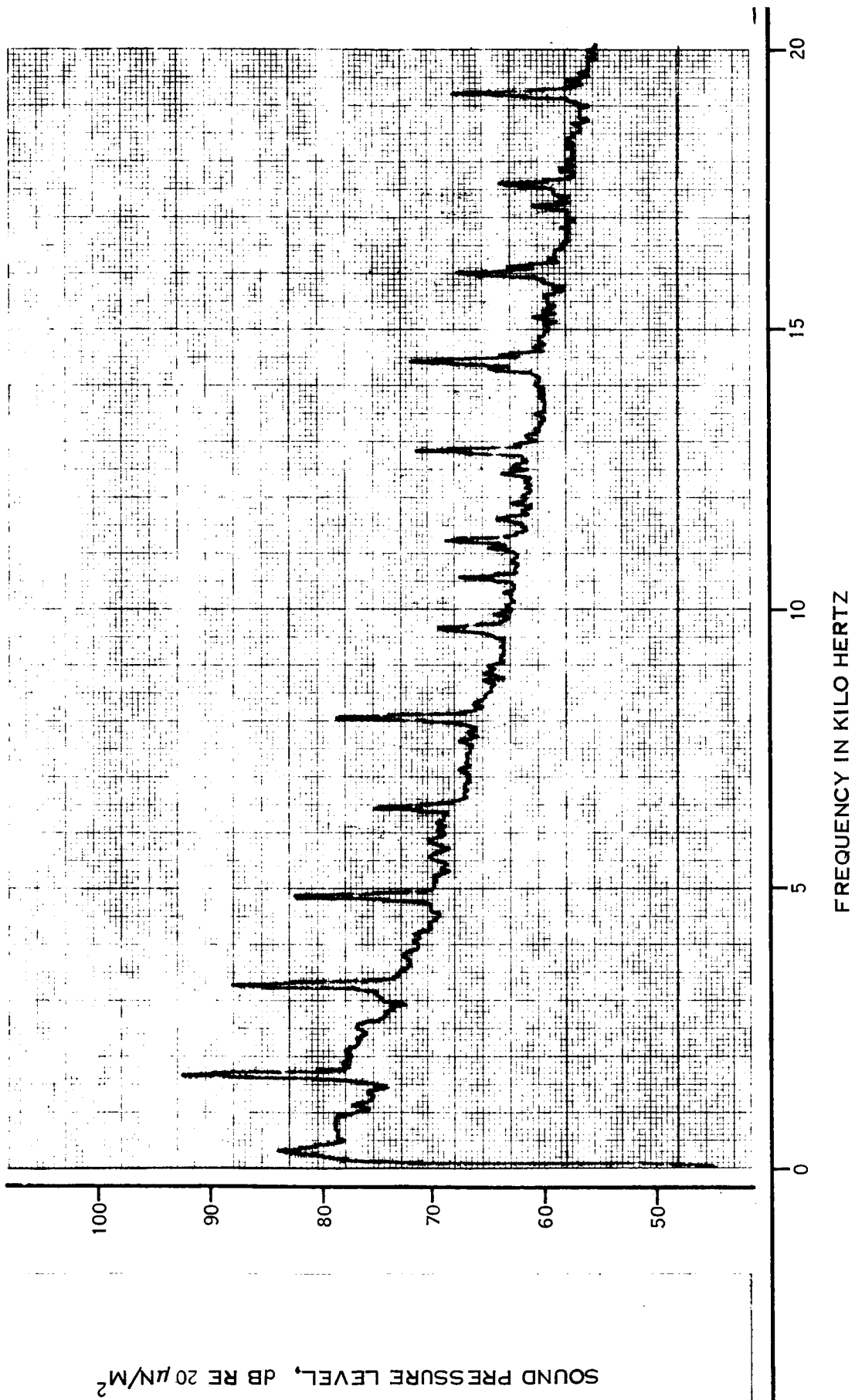
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 5

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 210 M/SEC (688 FT/SEC)  
117 MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)



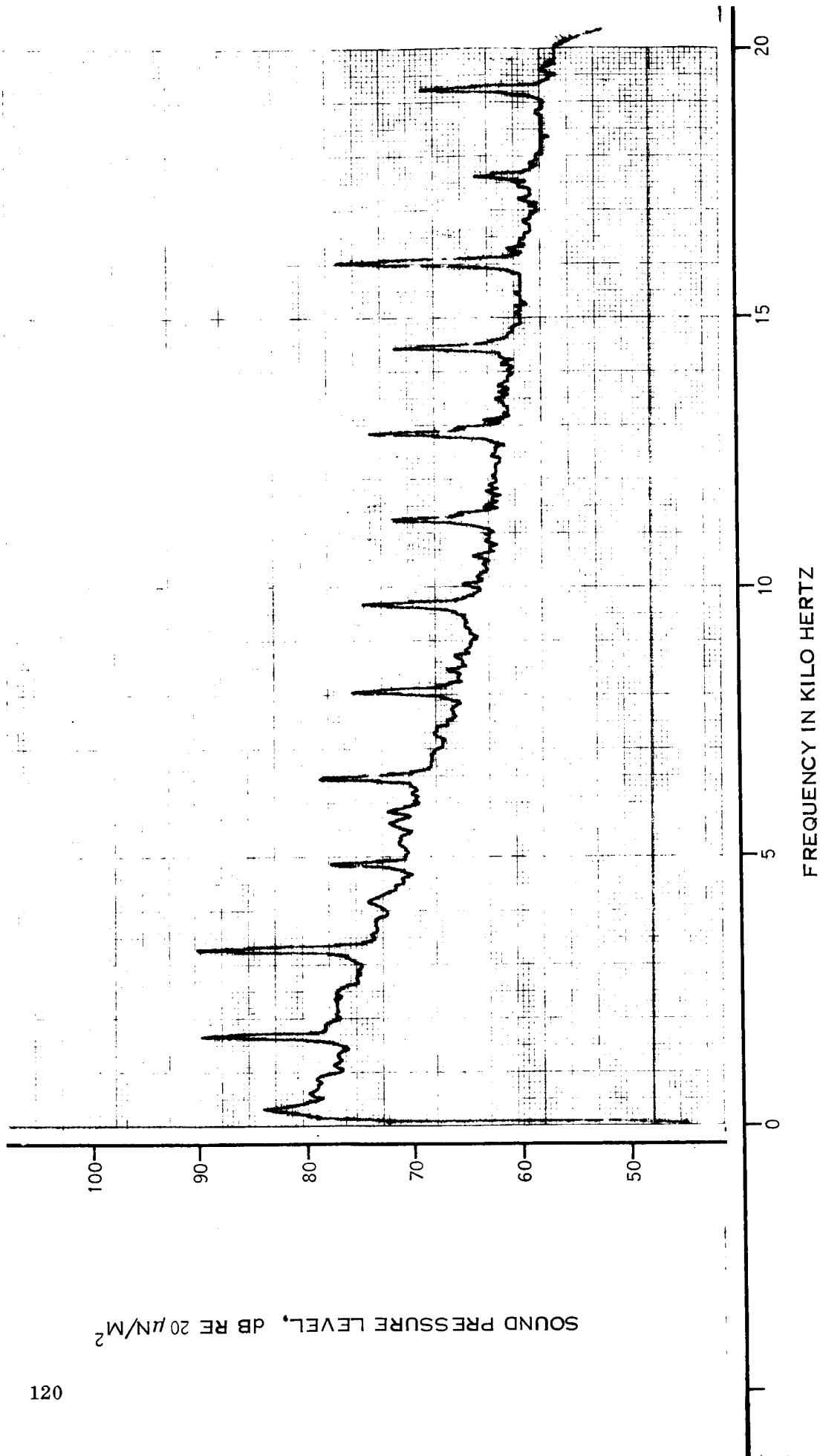
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 0 DEGREES AZIMUTH, 7.62 M (25 FT)



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

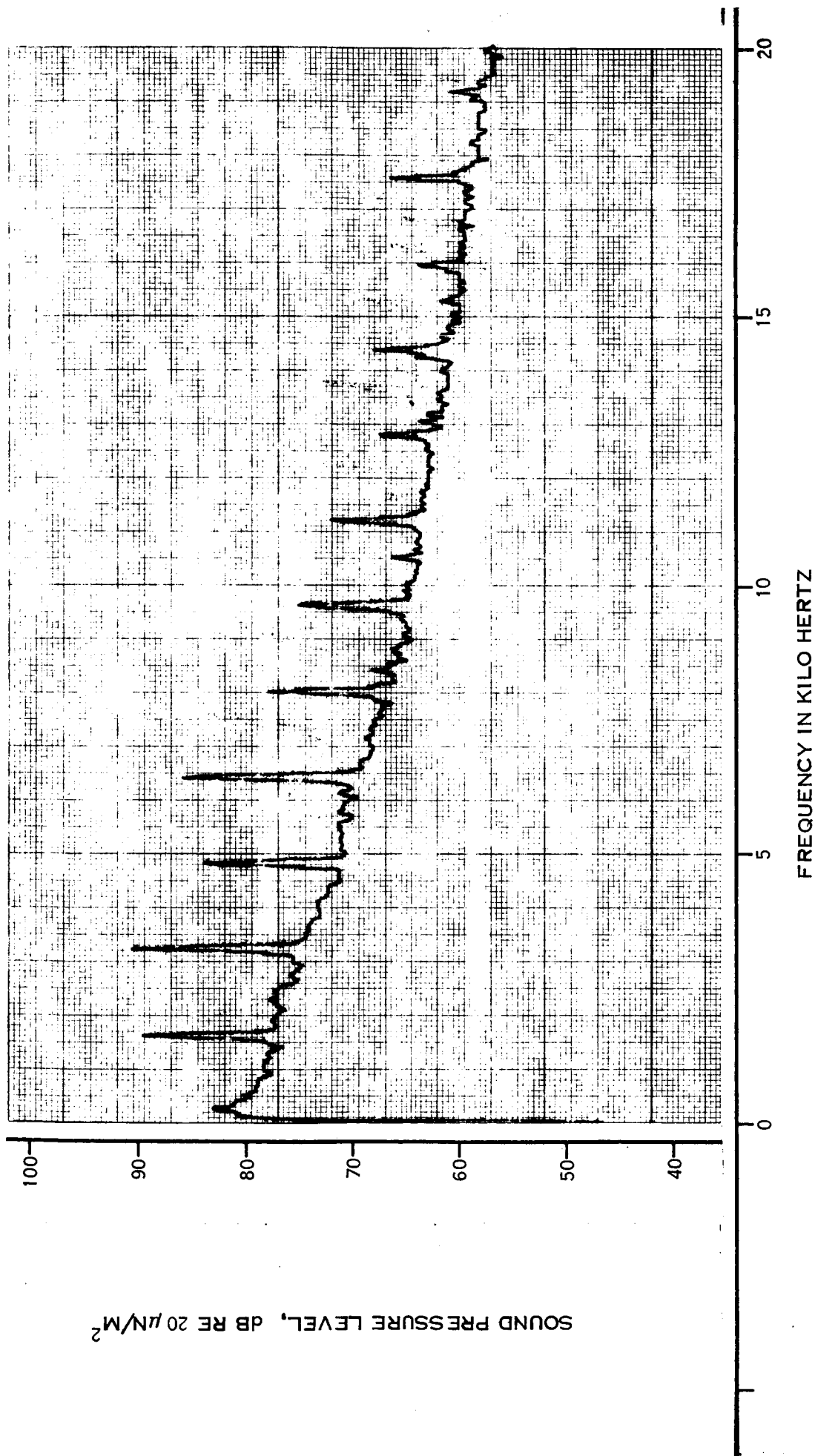
BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

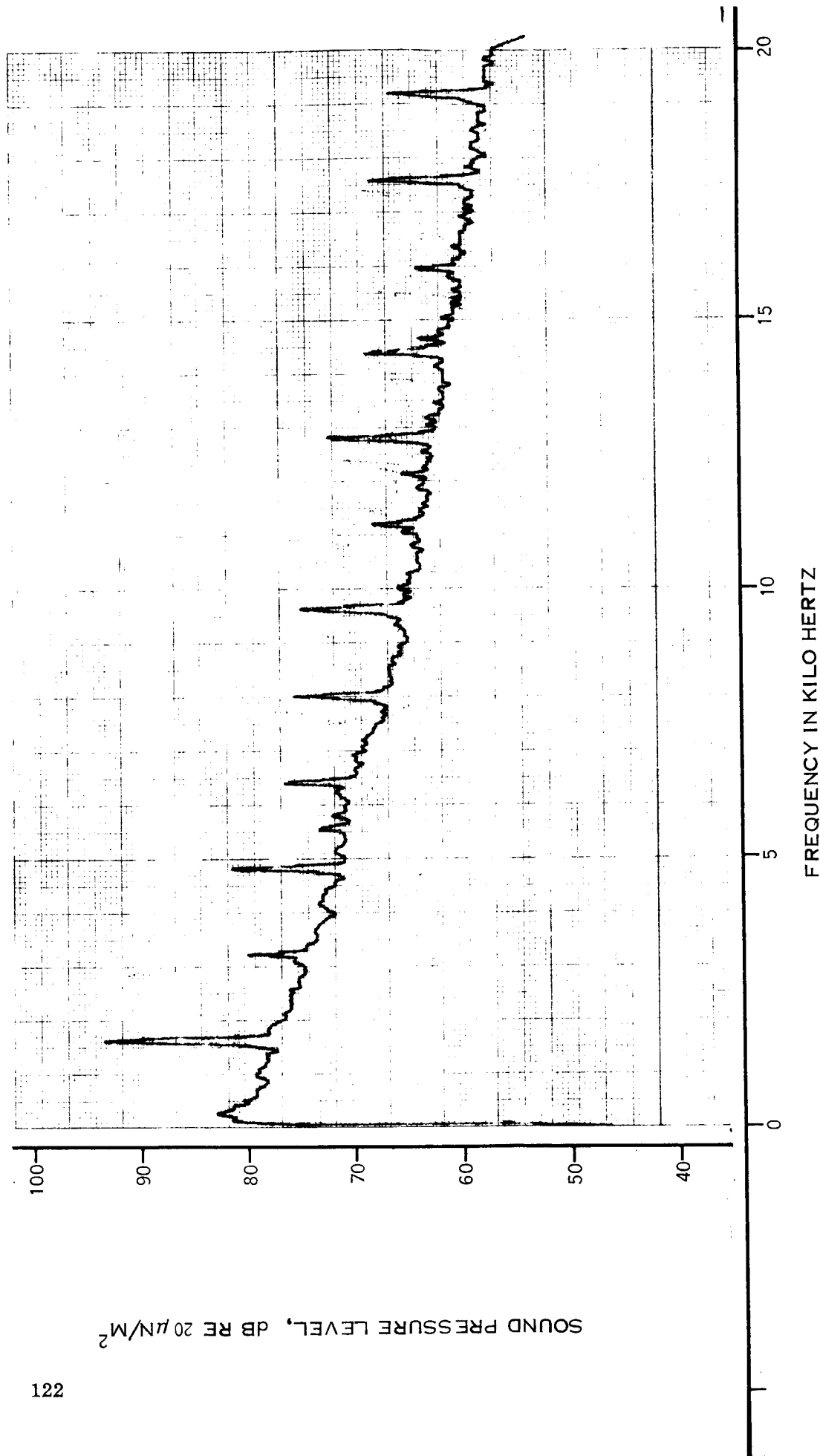
BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)

NU 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)

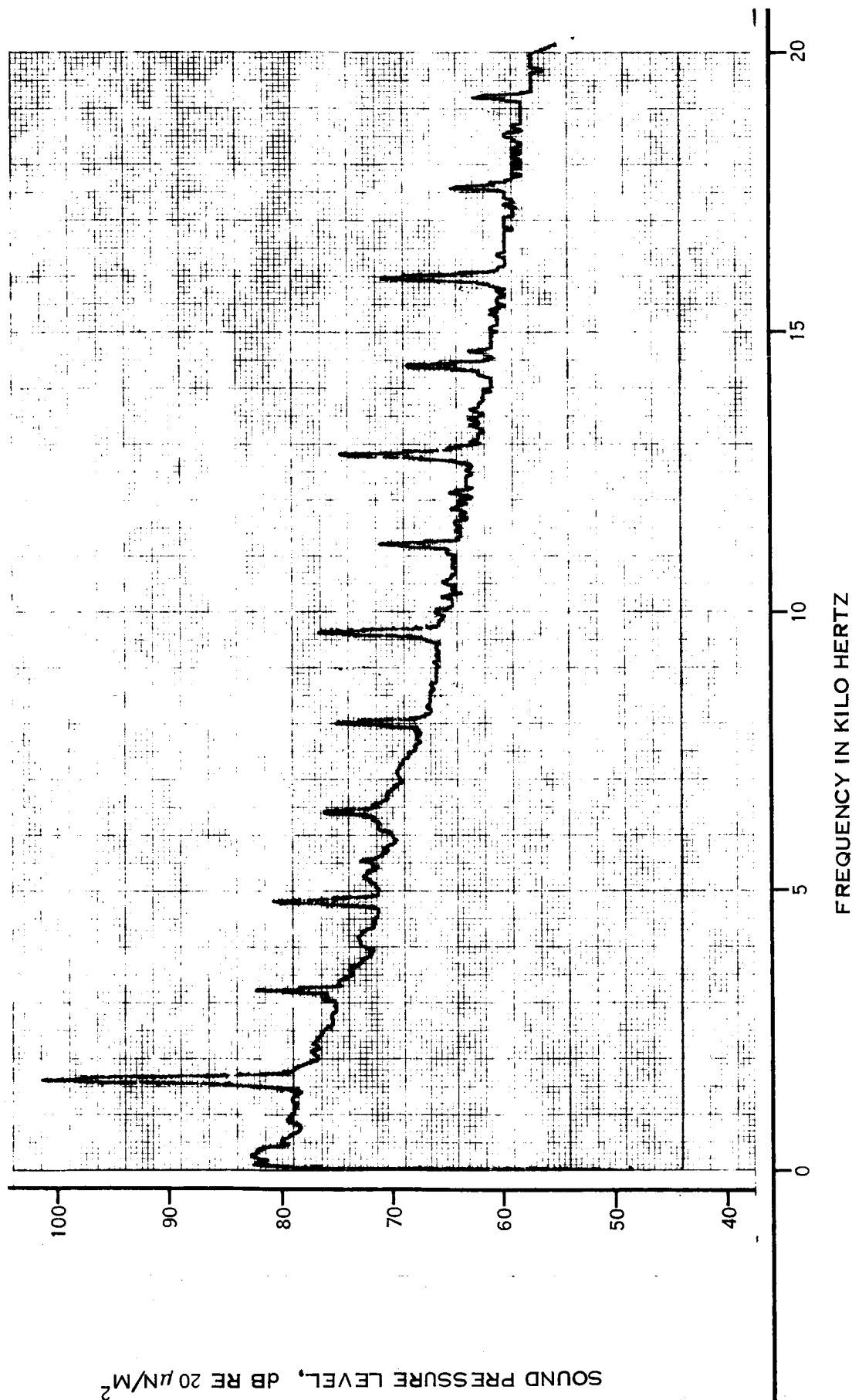


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)

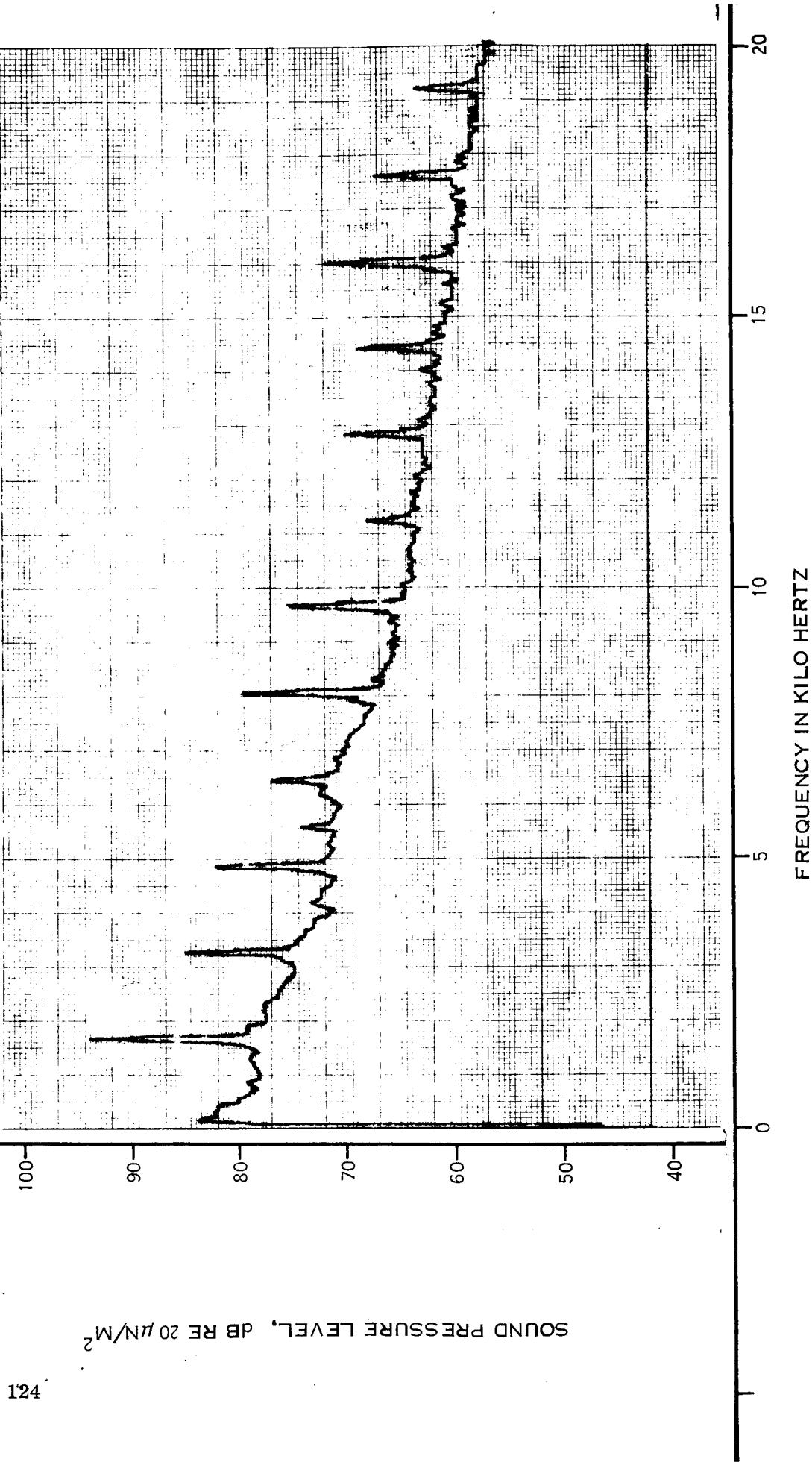


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FIVE  
FIVE  
FIVE



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)



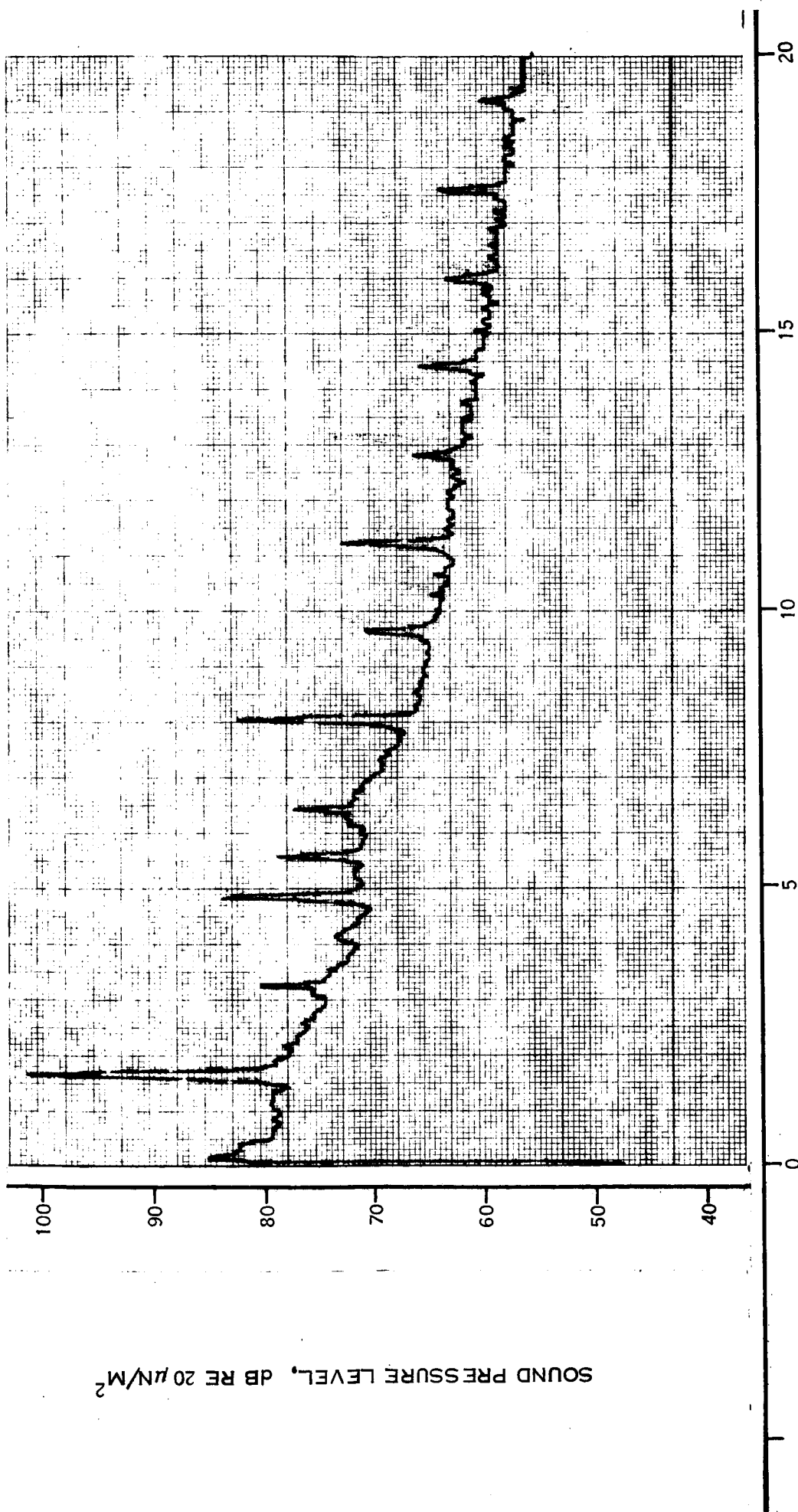
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 6

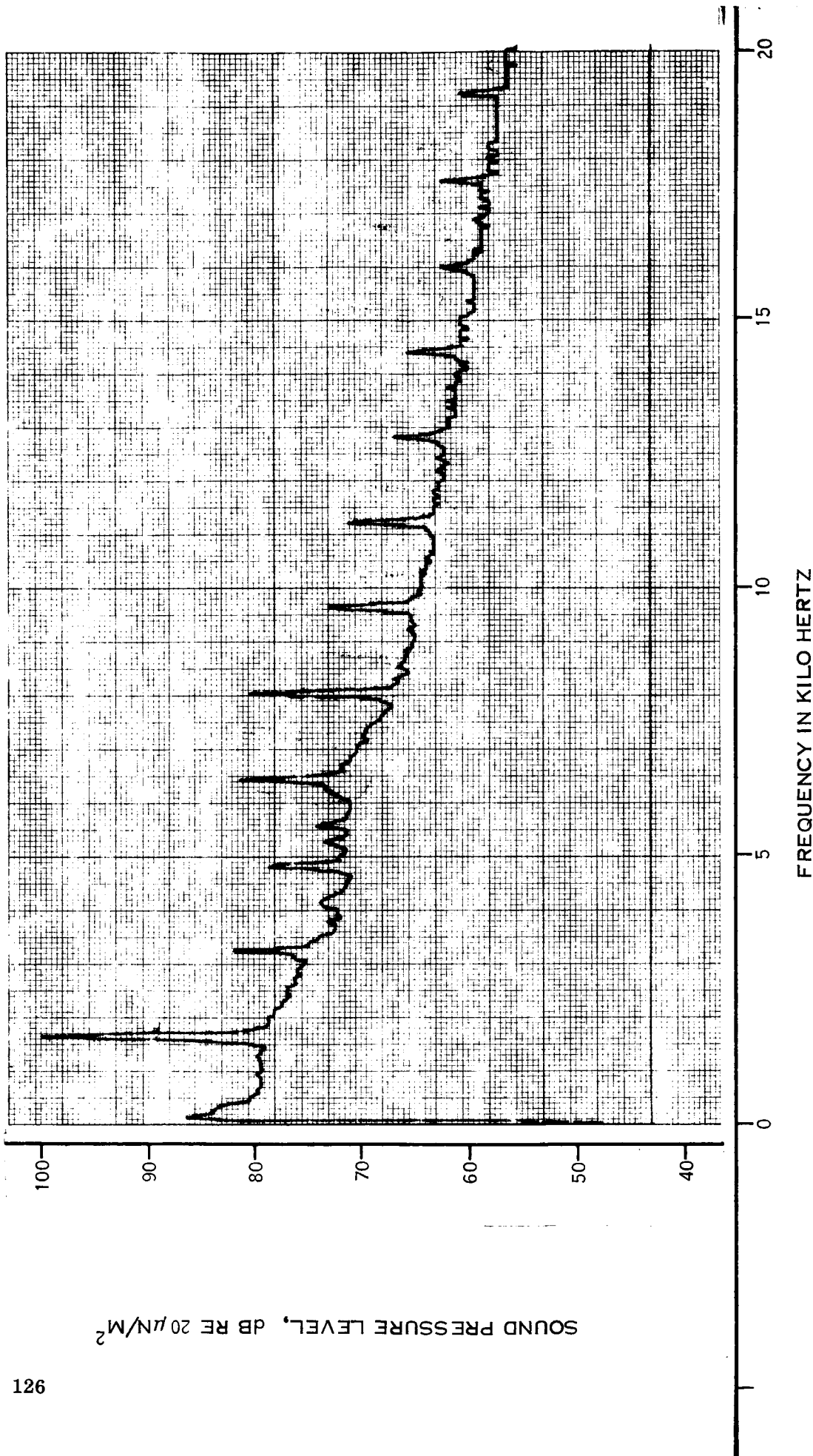


FREQUENCY IN KILO HERTZ

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

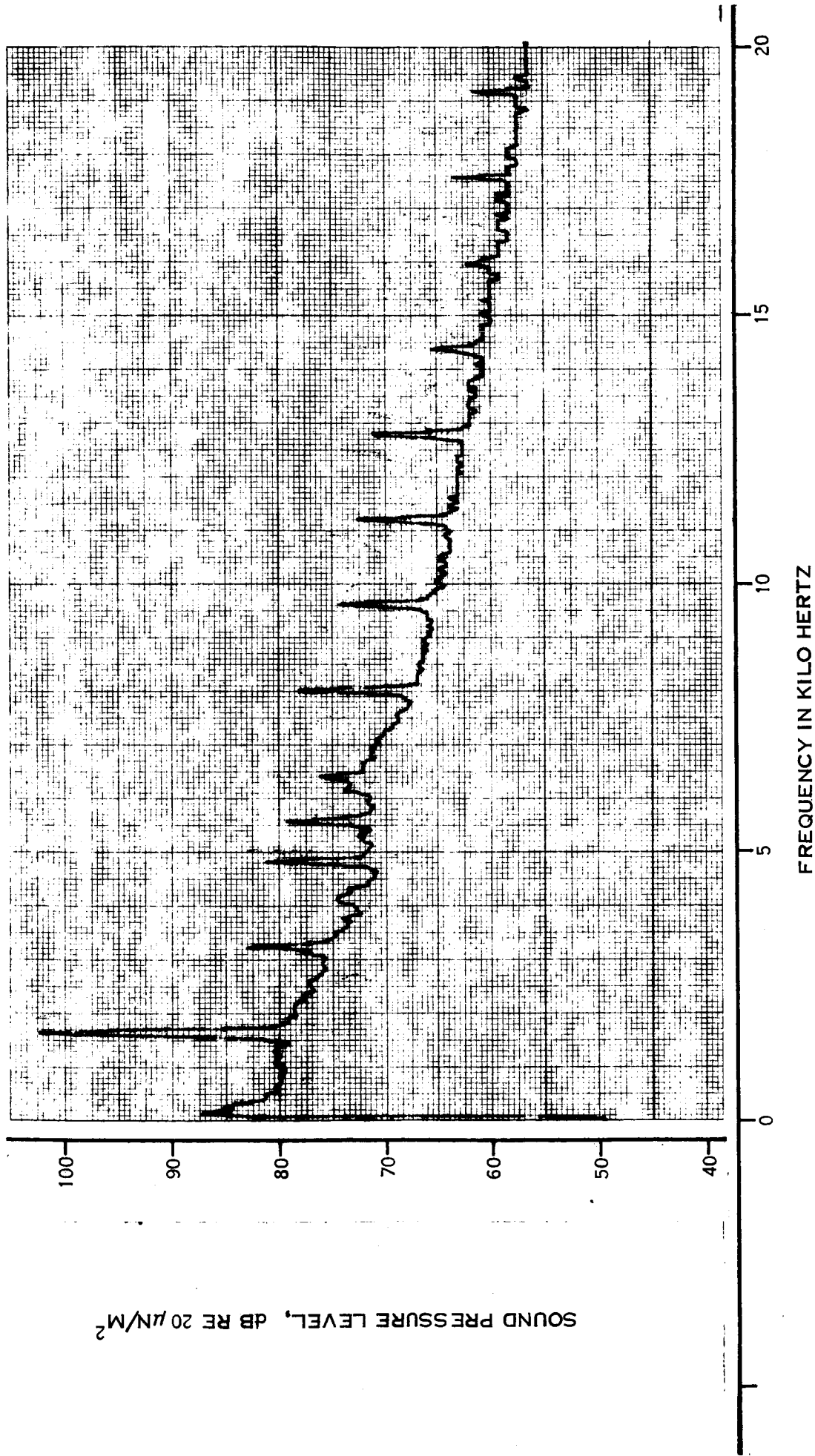
SOUND PRESSURE LEVEL, DB RE 20  $\mu$ N/M<sup>2</sup>



BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

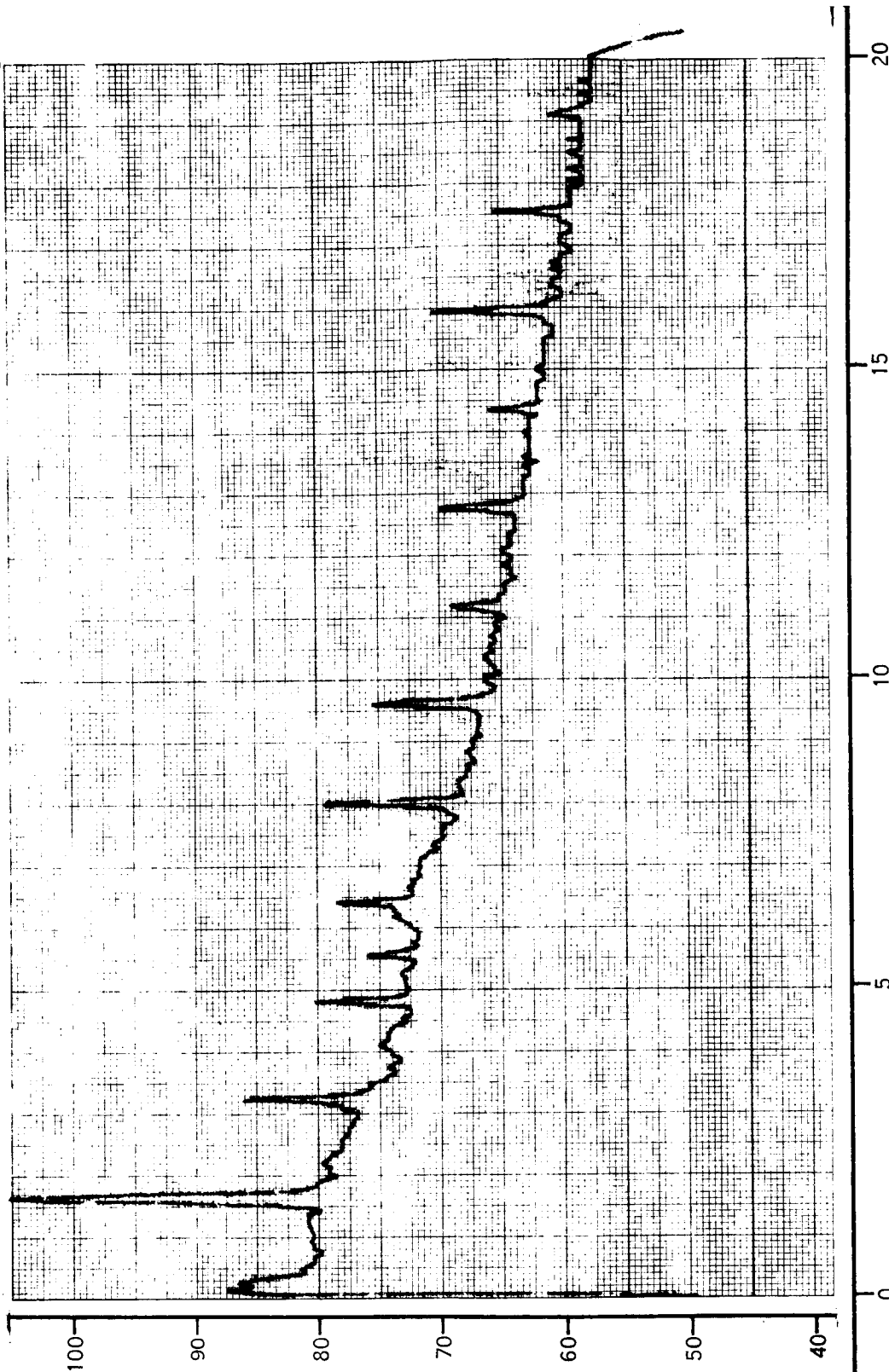
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

U. S. MECHANICAL CO.  
1000 10th St.  
New York, N. Y.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N/M}^2$ 

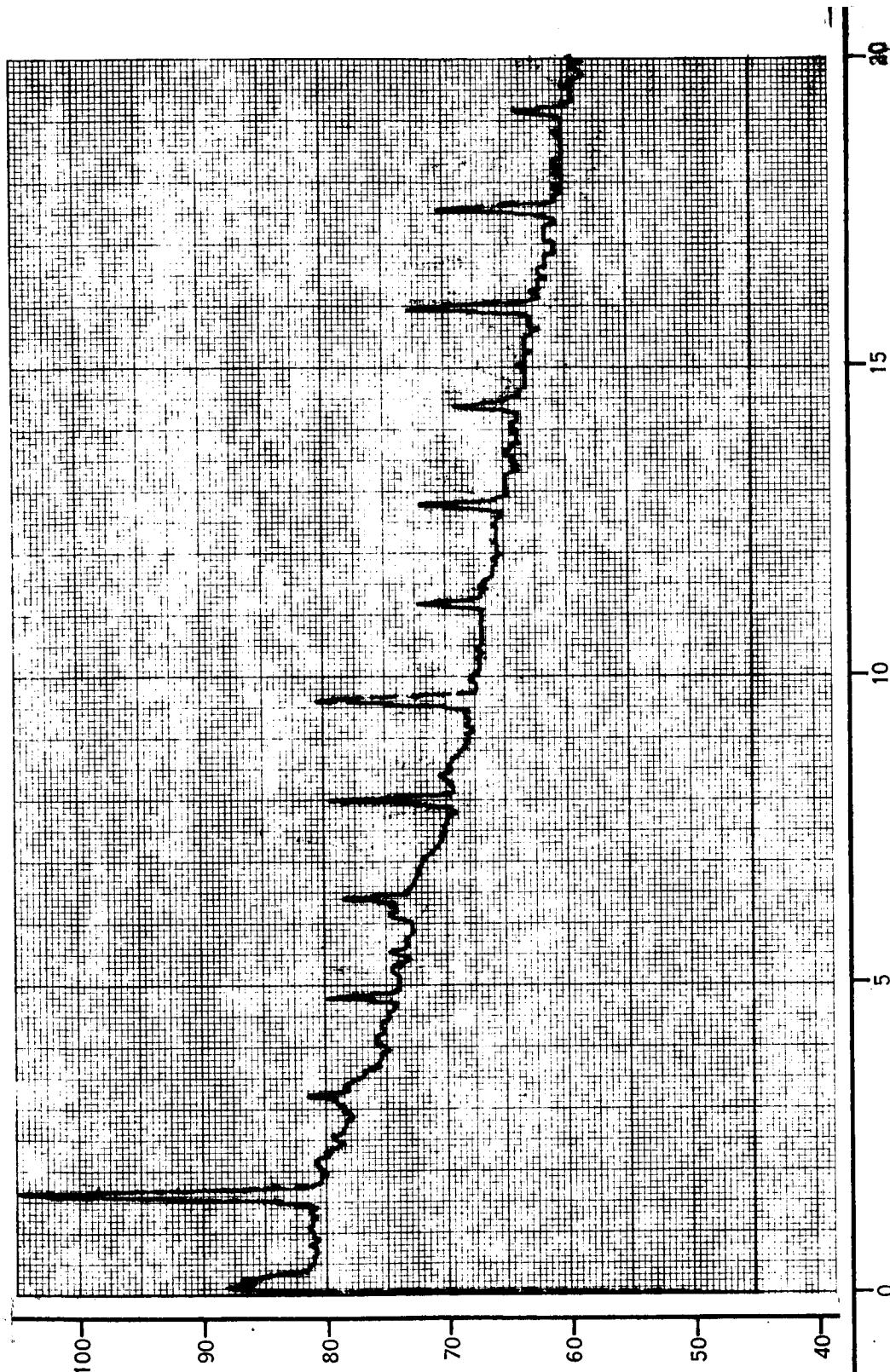
FREQUENCY IN KILO HERTZ

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 100 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER

FUSENE DIETZGEN CO.  
MADE IN U.S.A.



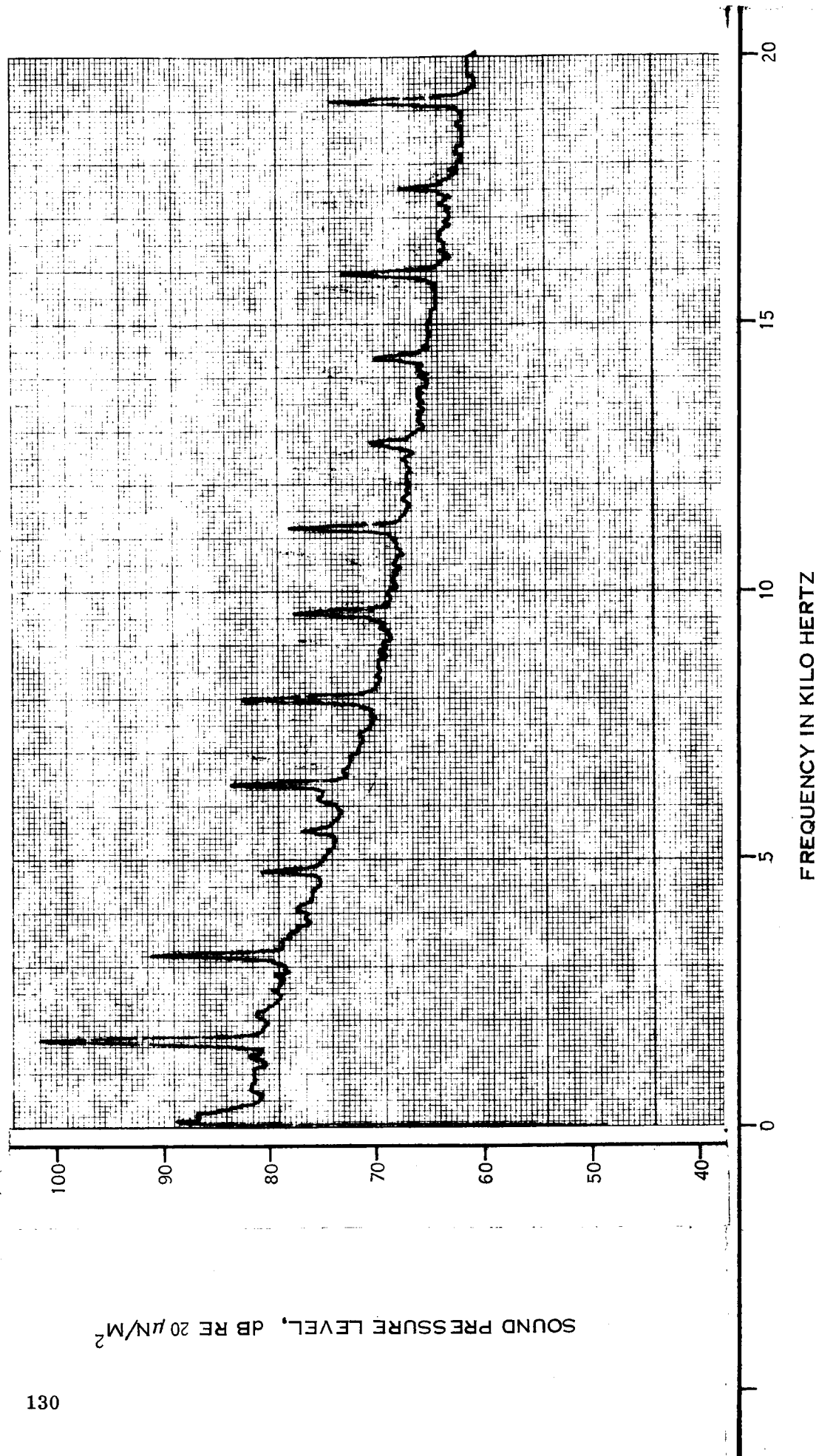
SOUND PRESSURE LEVEL, DB RE 20  $\mu$ N/M<sup>2</sup>

FREQUENCY IN KILO HERTZ

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)





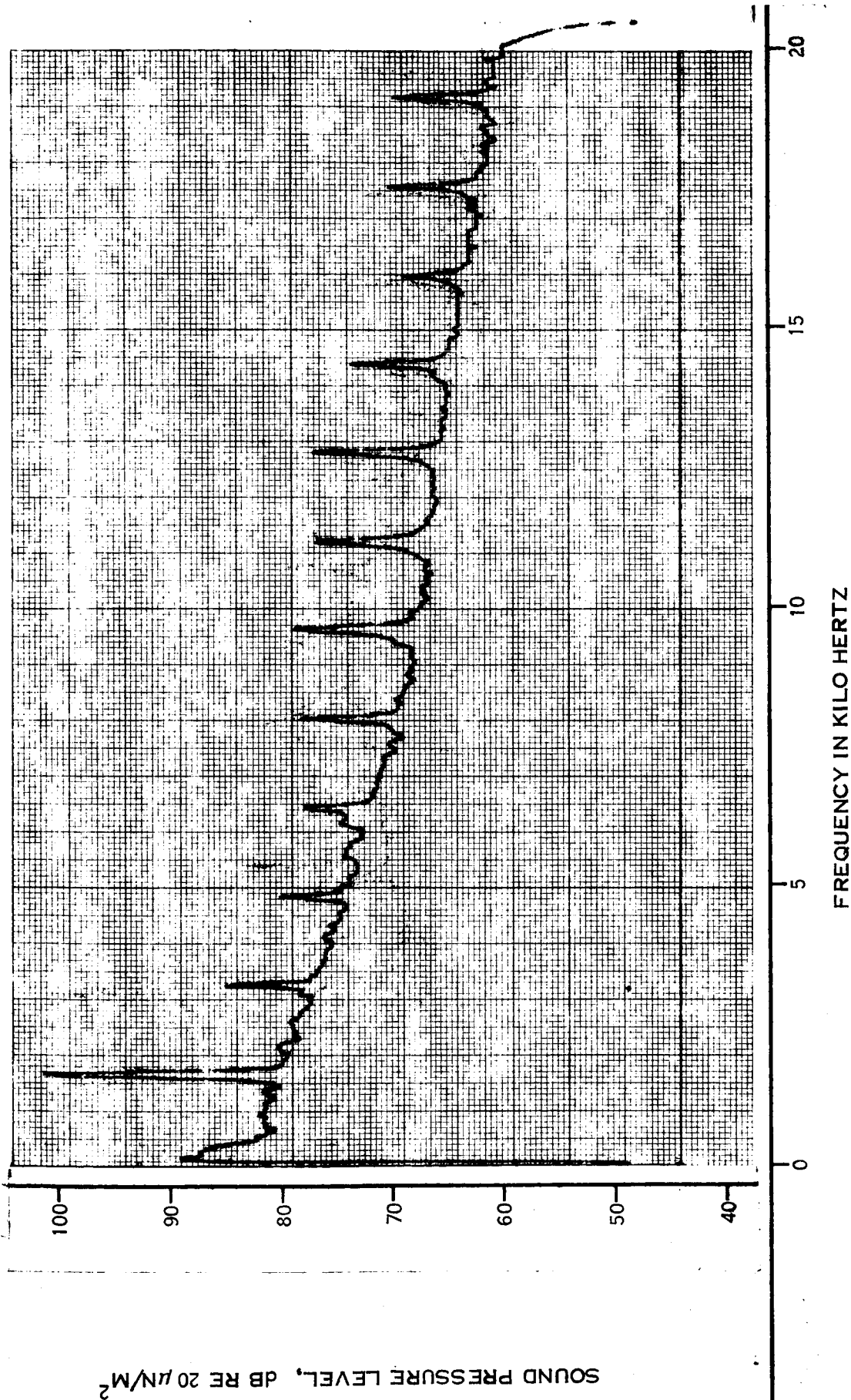
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)



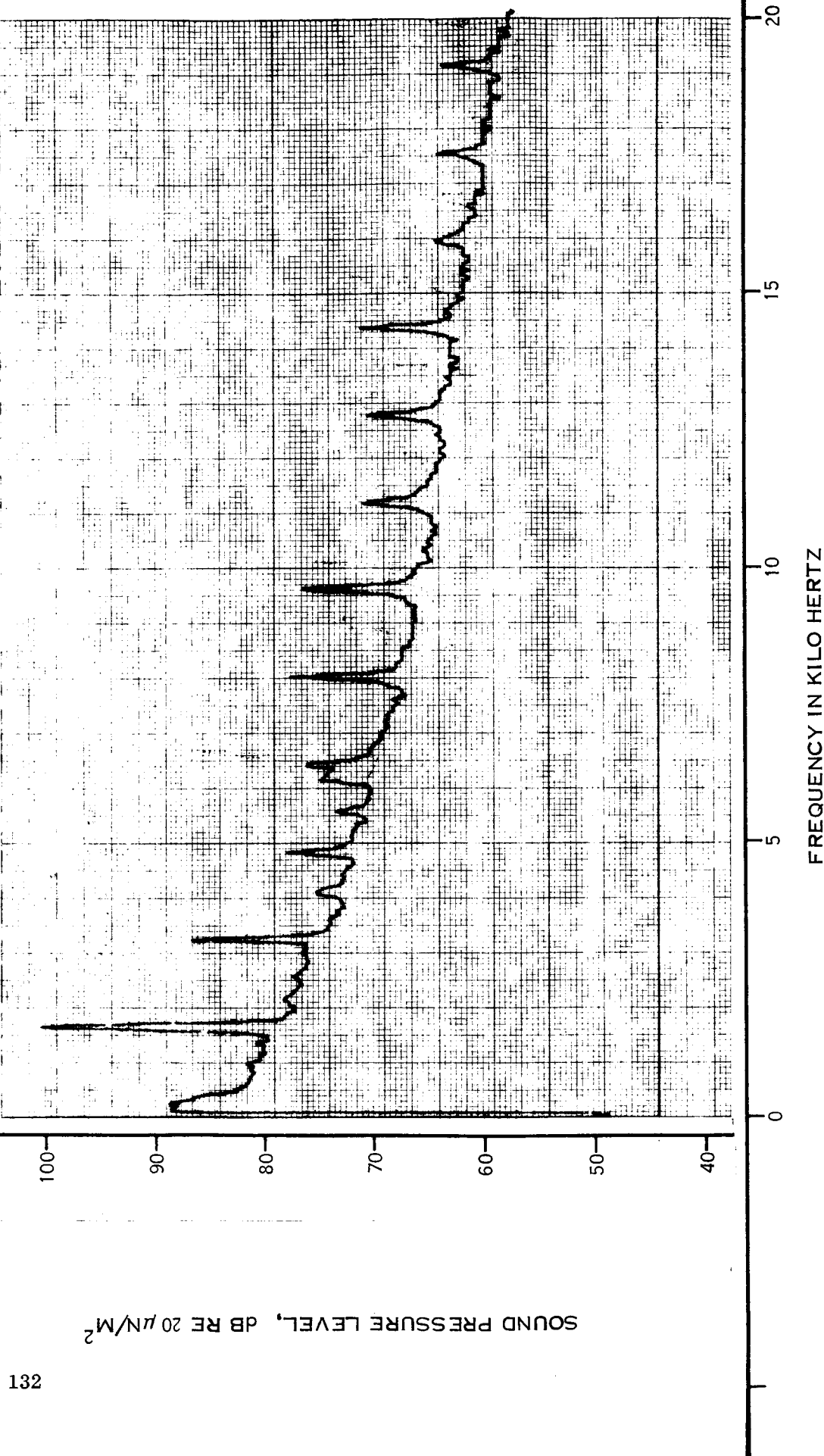
100 3-1000 DIETZGEN GRAPH PAPER  
MIL. METER

ERLINE DIEZGEN CO.  
MADE IN U.S.A.

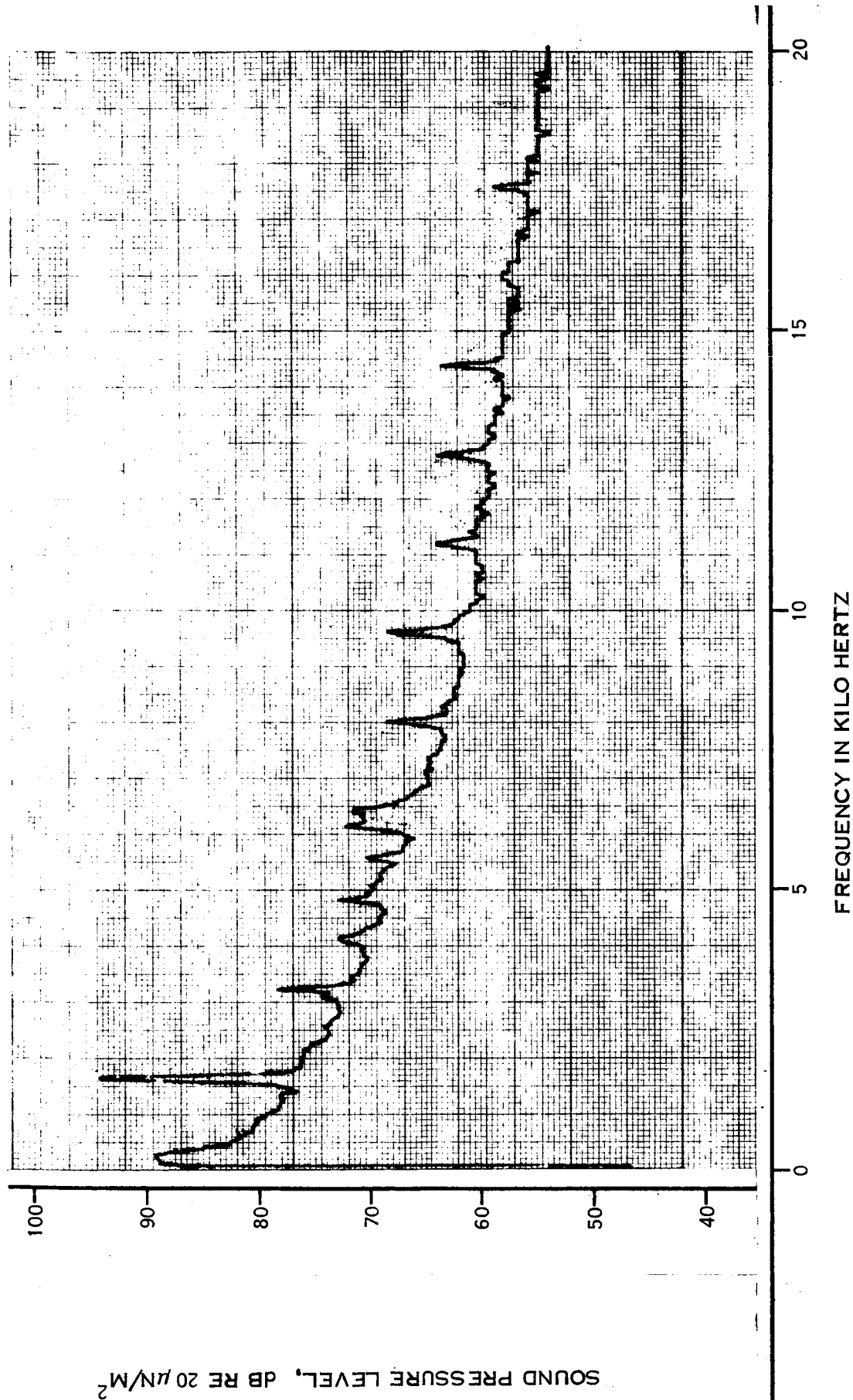


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)

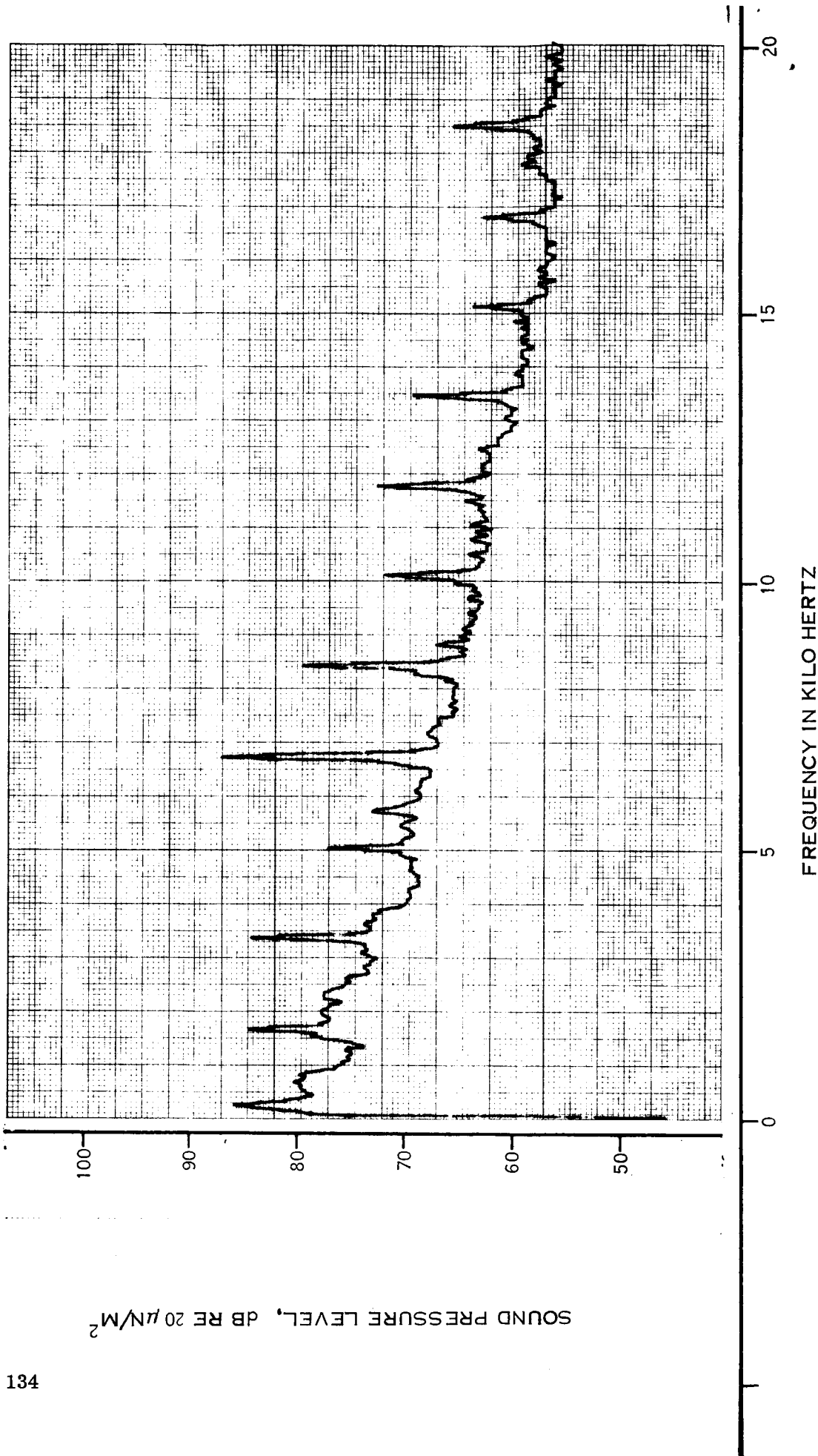


NO. 243 M DIETZEN 189 M (620 FT) 7.62 M (25 FT) 150 DEGREES



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 6

BLADE ANGLE: 57.4 DEGREES  
TIP SPEED: 189 M/SEC (620 FT/SEC)  
MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)

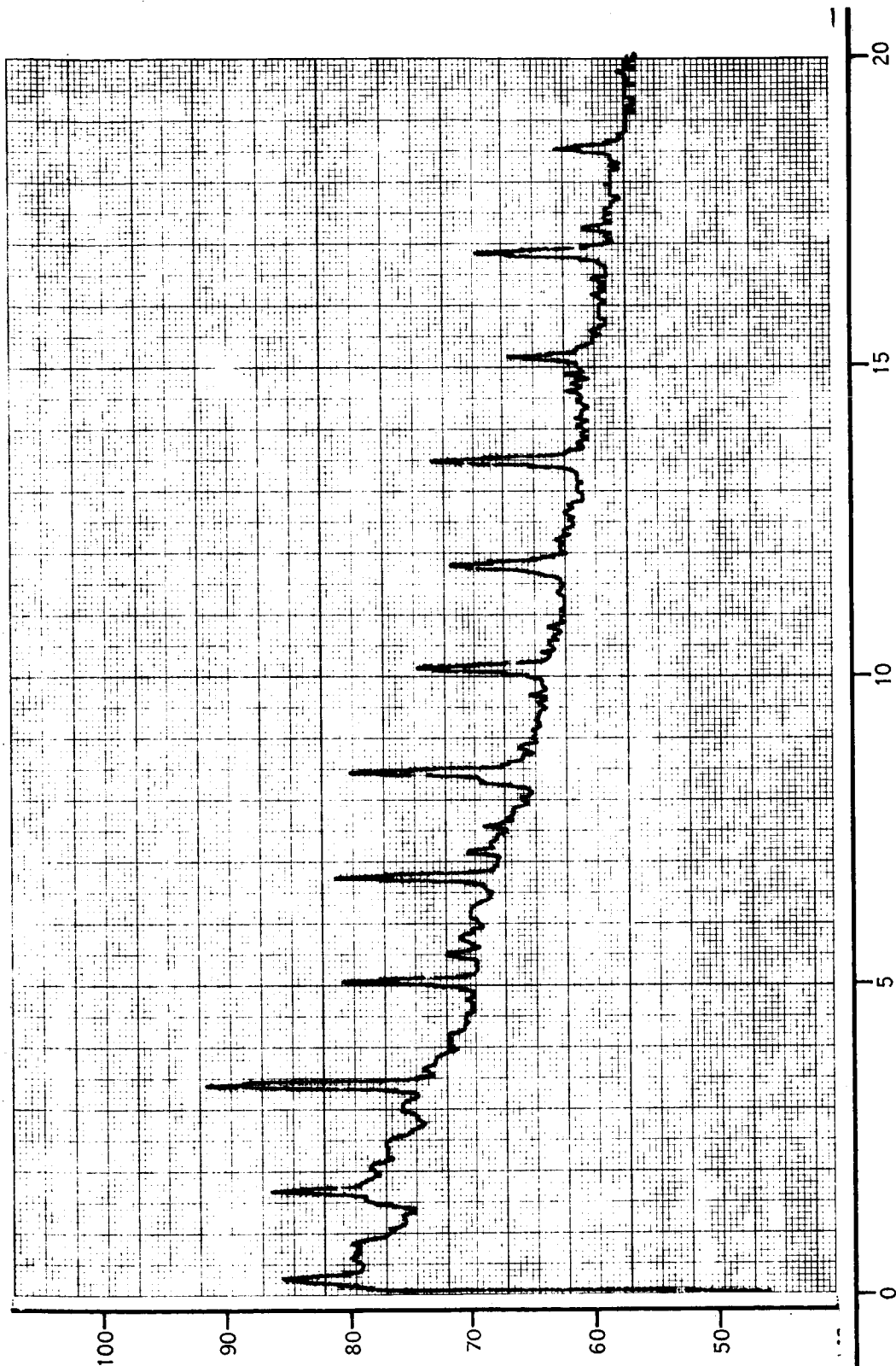


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 0 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 730-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U.S.A.



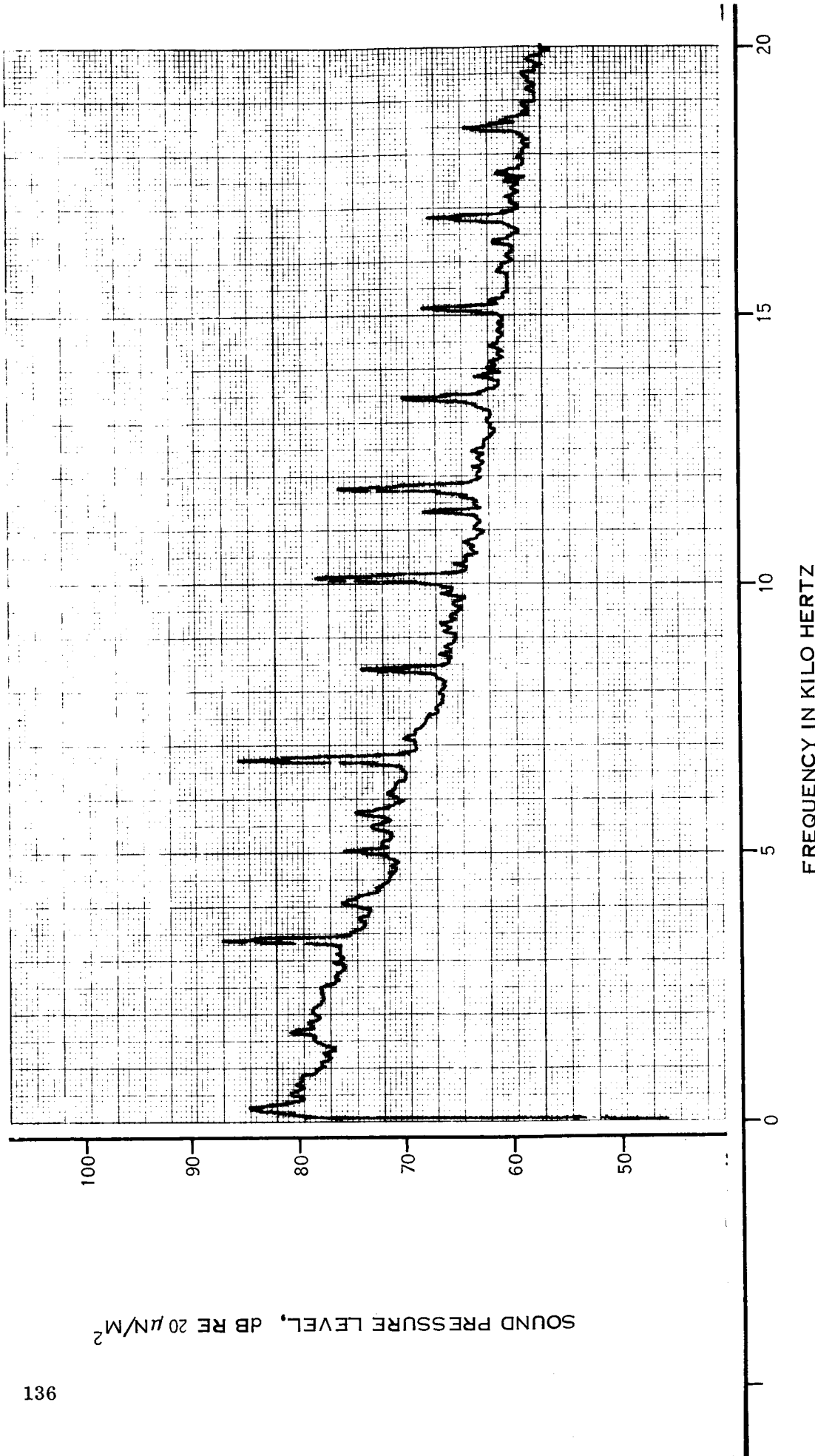
FREQUENCY IN KILO HERTZ

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)

SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N}/\text{M}^2$

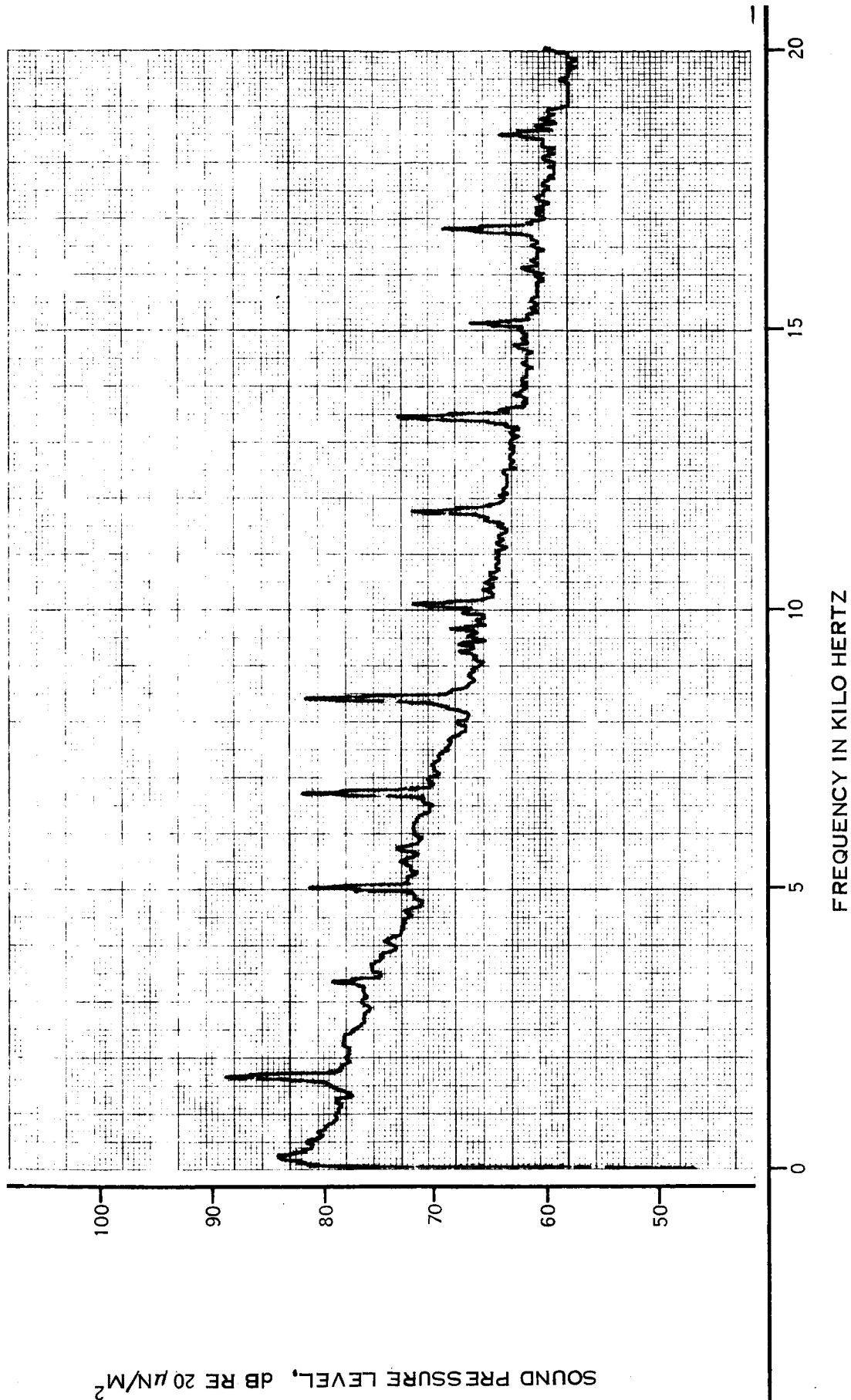
SOUND PRESSURE LEVEL, dB RE 20  $\mu\text{N}/\text{M}^2$



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

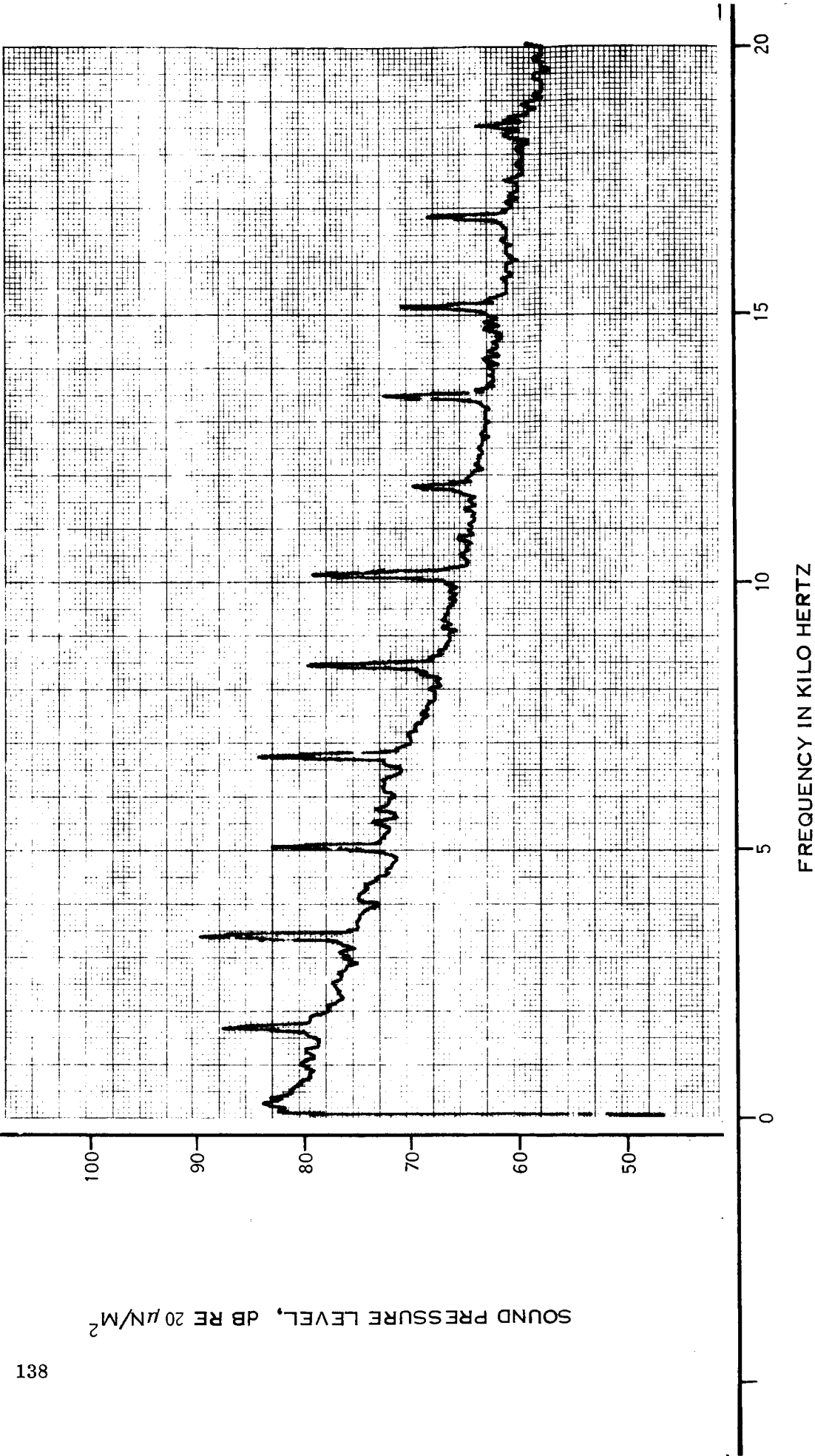
BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)



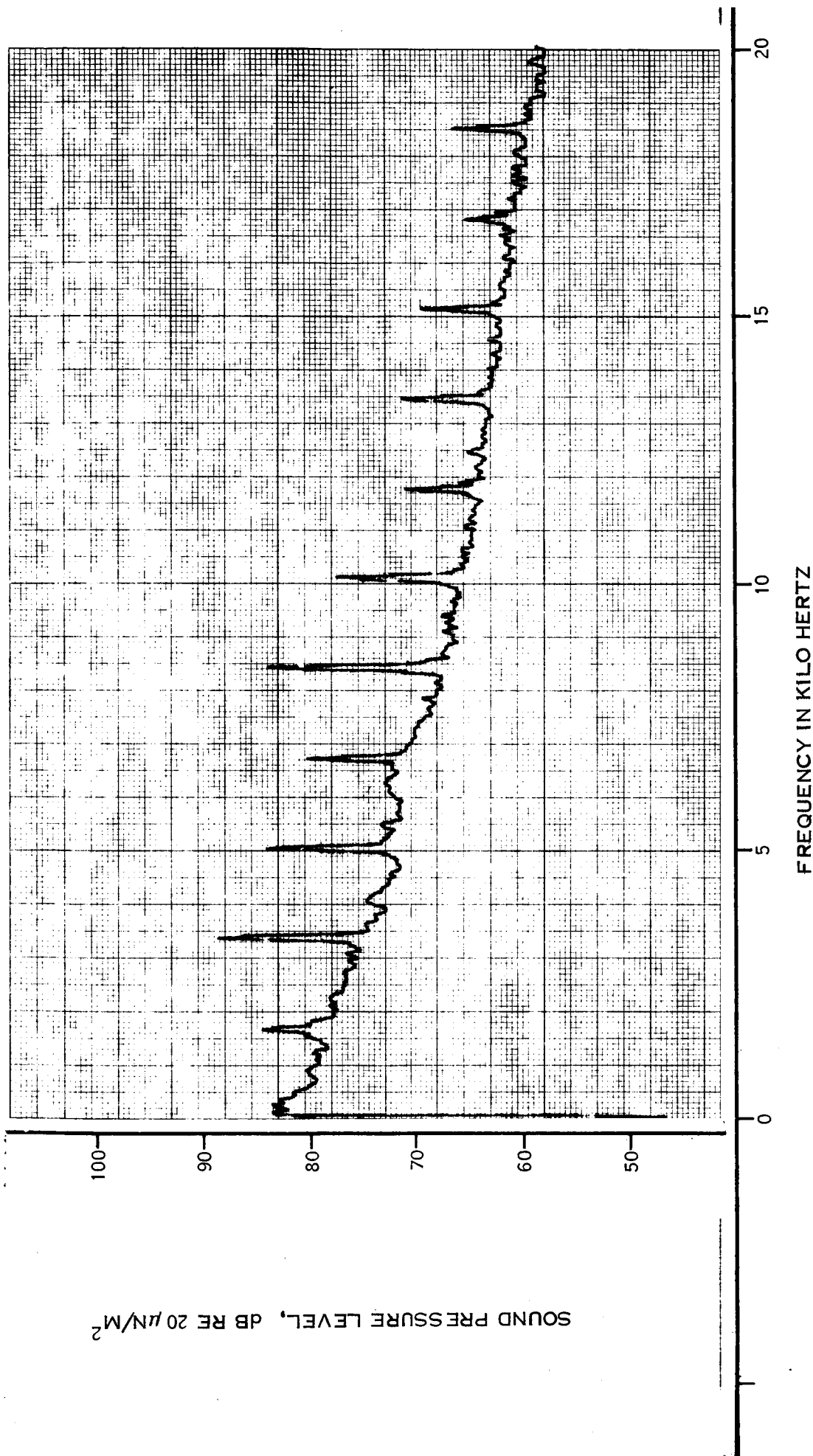
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)



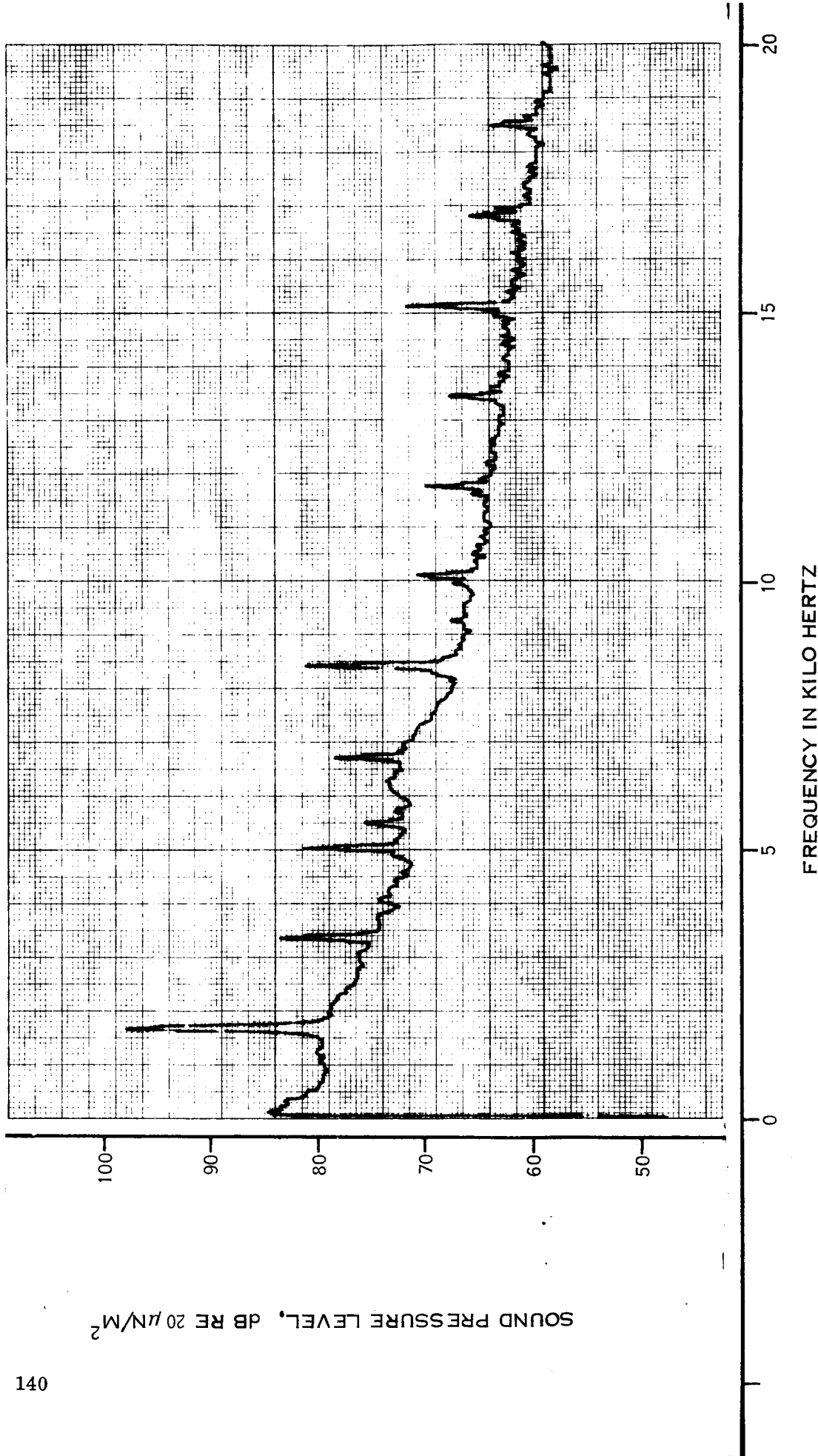
NO. 5400M DIETZEN VESSEL APER  
MILITARY

NO. 5400M DIETZEN VESSEL APER  
MILITARY



BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8



BLADE ANGLE: 52.6 DEGREES

TIP SPEED: 199 M/SEC (654 FT/SEC)

MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

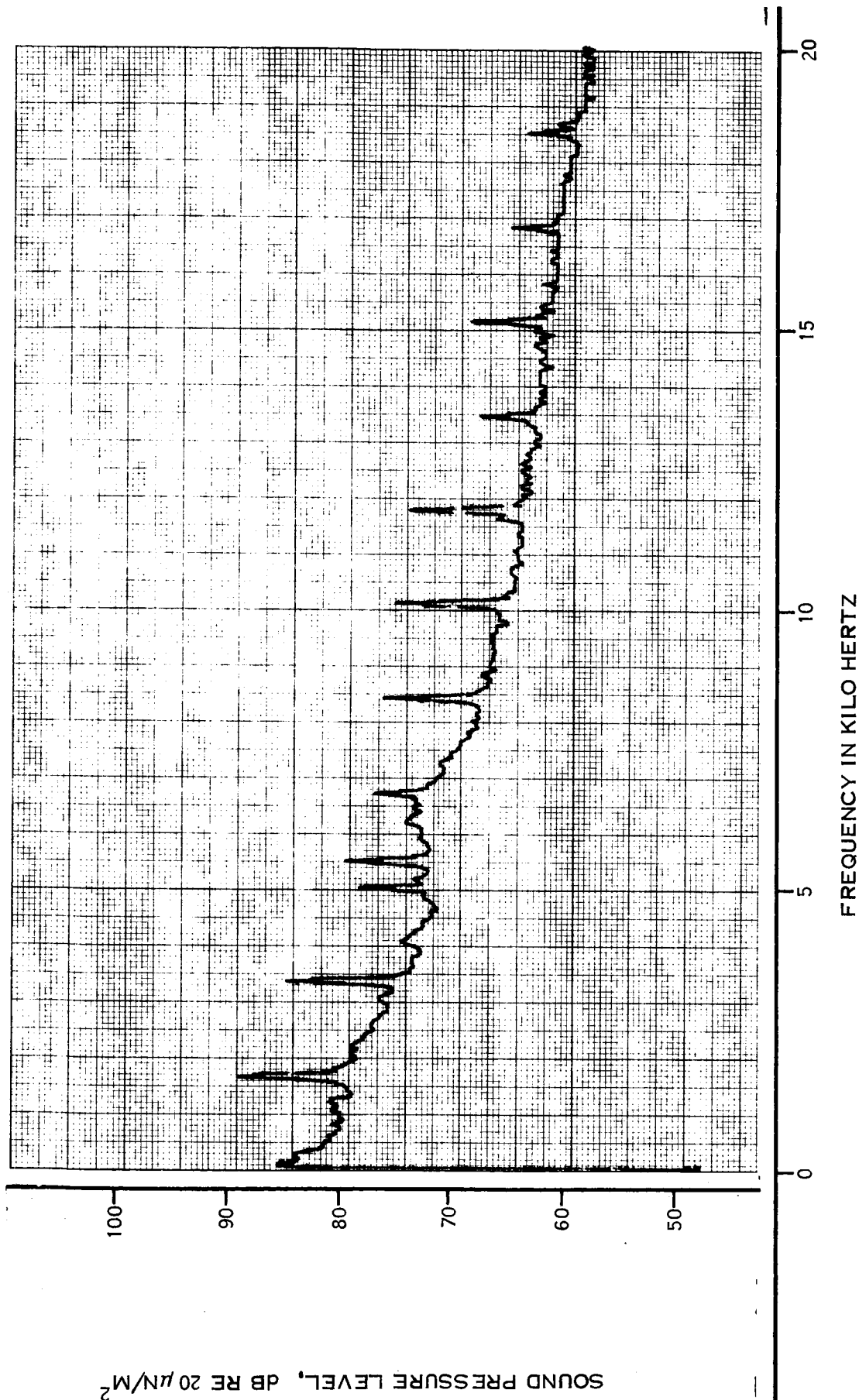
60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 8

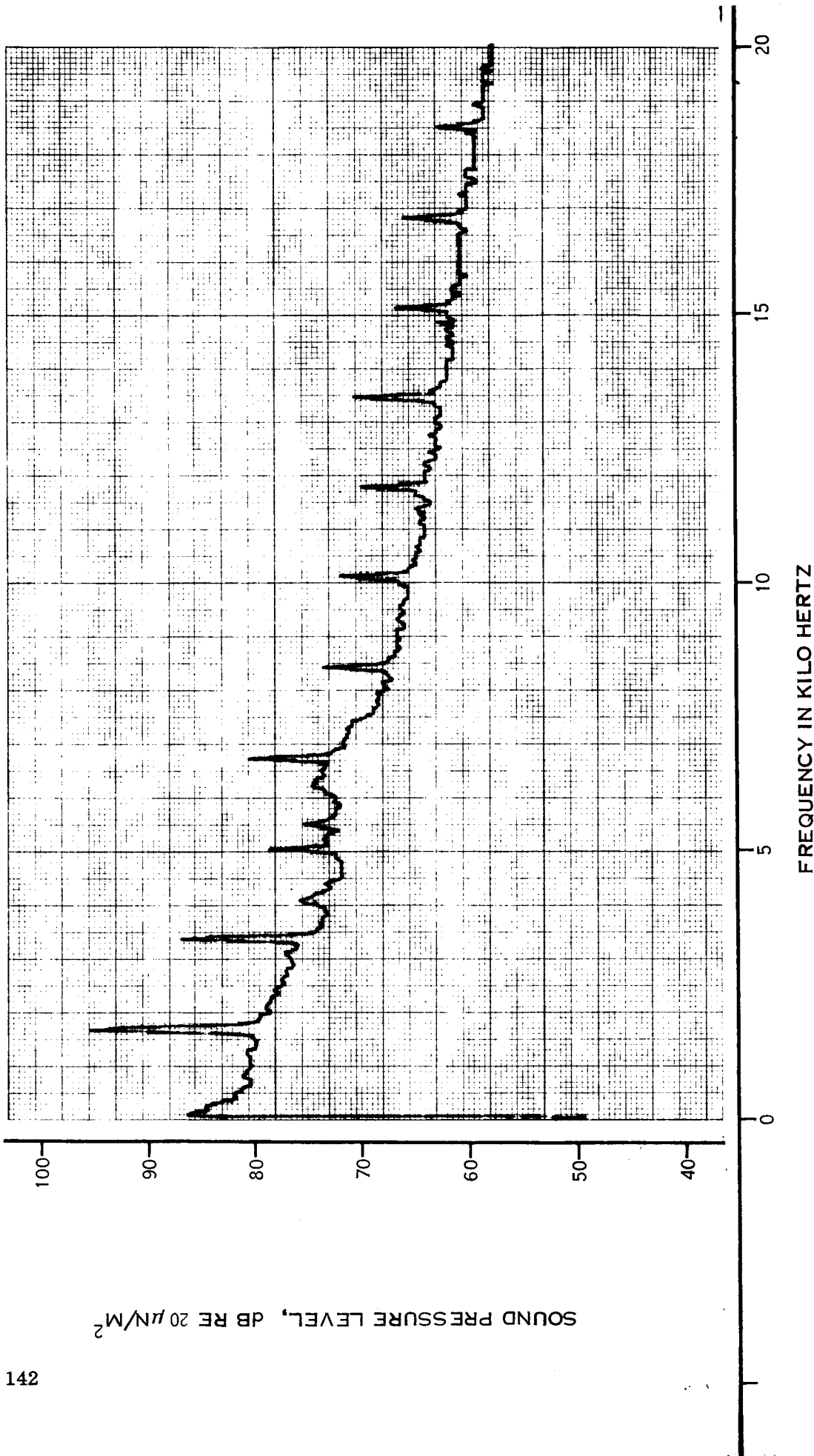
NO. 141-10 DAYZGEN GRAPH PAPER  
MILLIMETER

JOHN DAYZGEN CO.  
NEW YORK, N. Y.



BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
141 MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

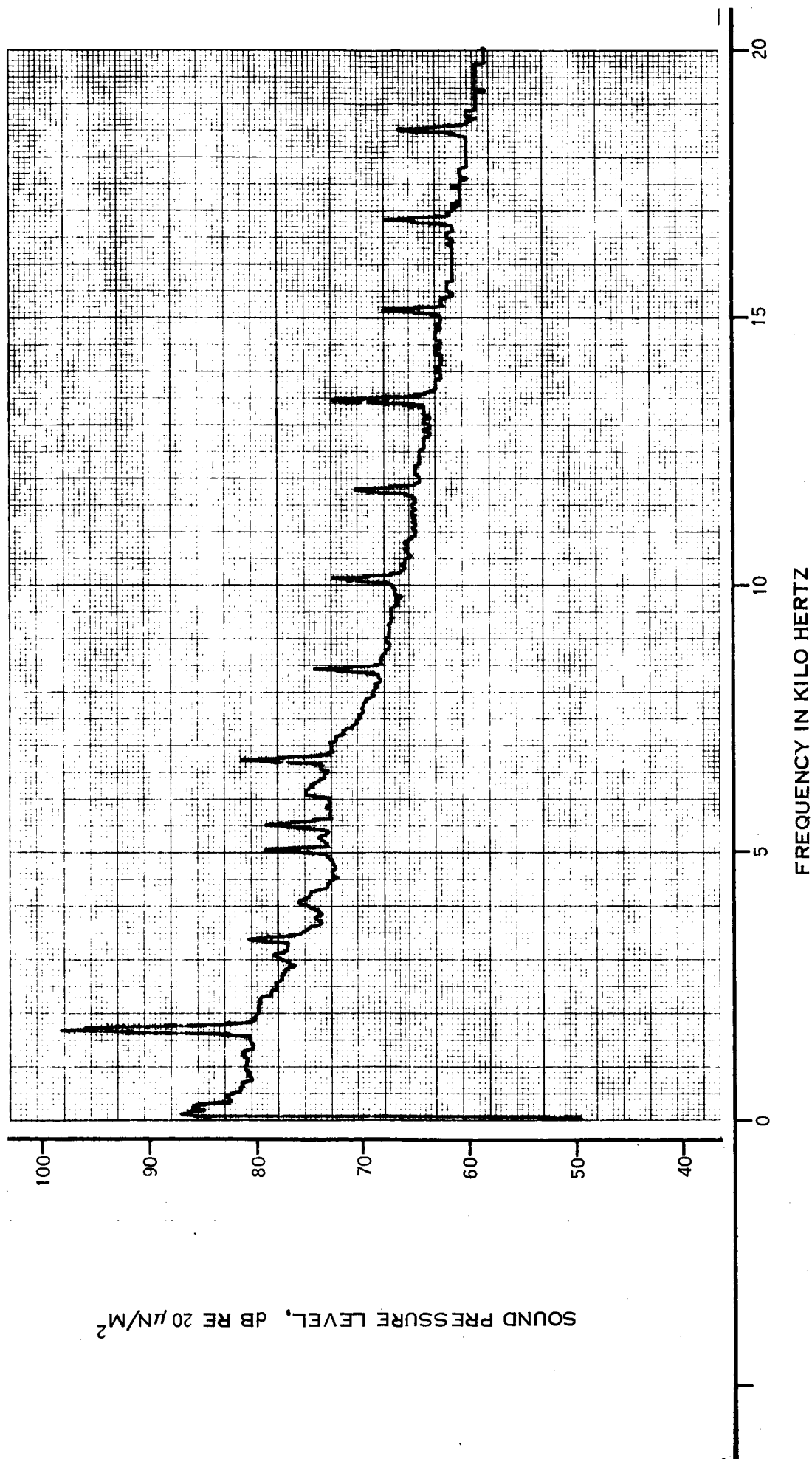
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

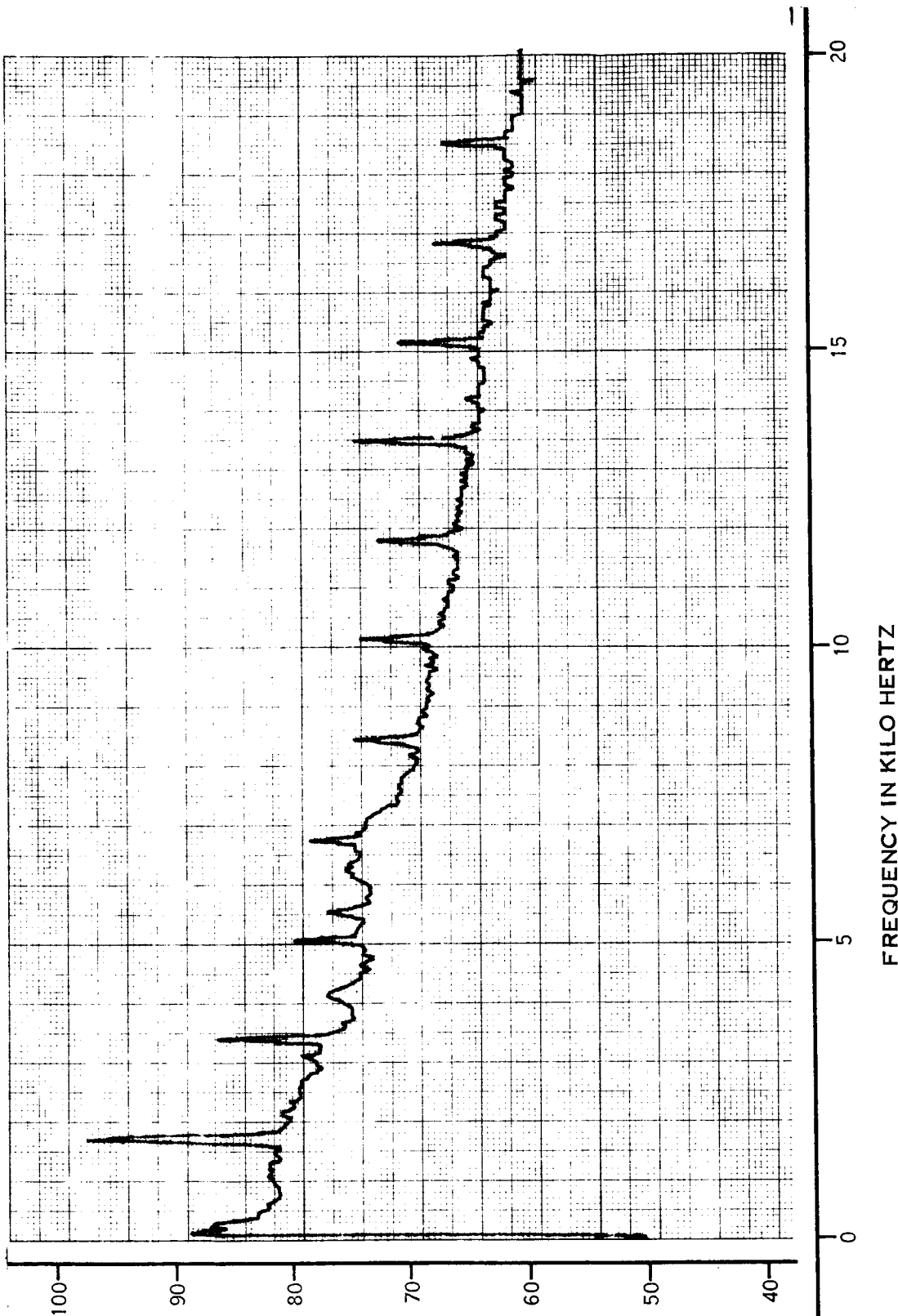
BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 340-M DIETZSEN GRAPH PAPER  
MIL. 10-10-50



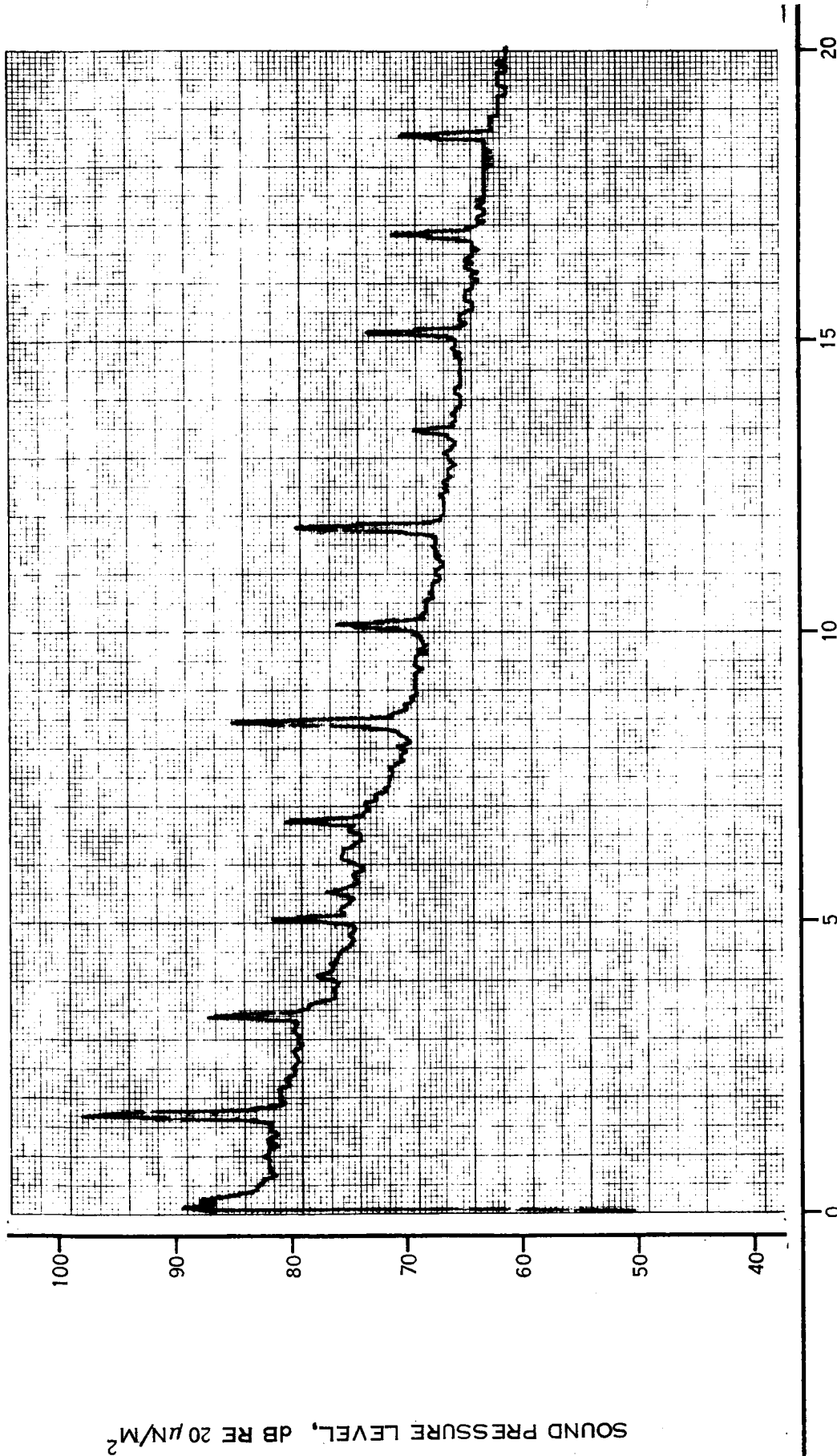
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N}/\text{M}^2$ EUGENE DIE 267M-CP  
M. J. J. 5. 2.ND 140-M DIETZEN GRAPH PAPER  
MILLIMETER60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 100 DEGREES AZIMUTH, 7.62 M (25 FT)

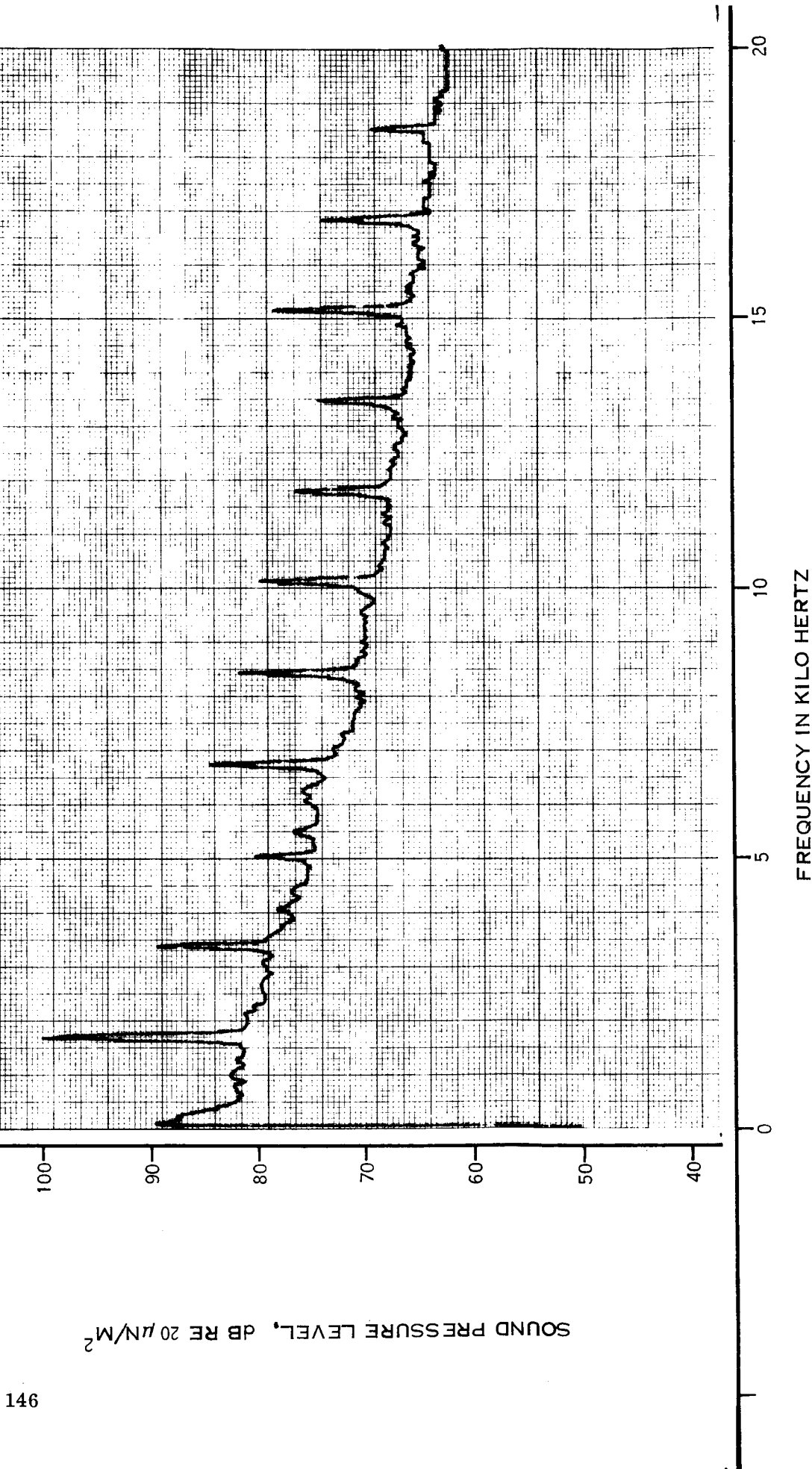
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

DIETZGEN  
MADE IN U.S.A.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
14<sup>5</sup> MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)



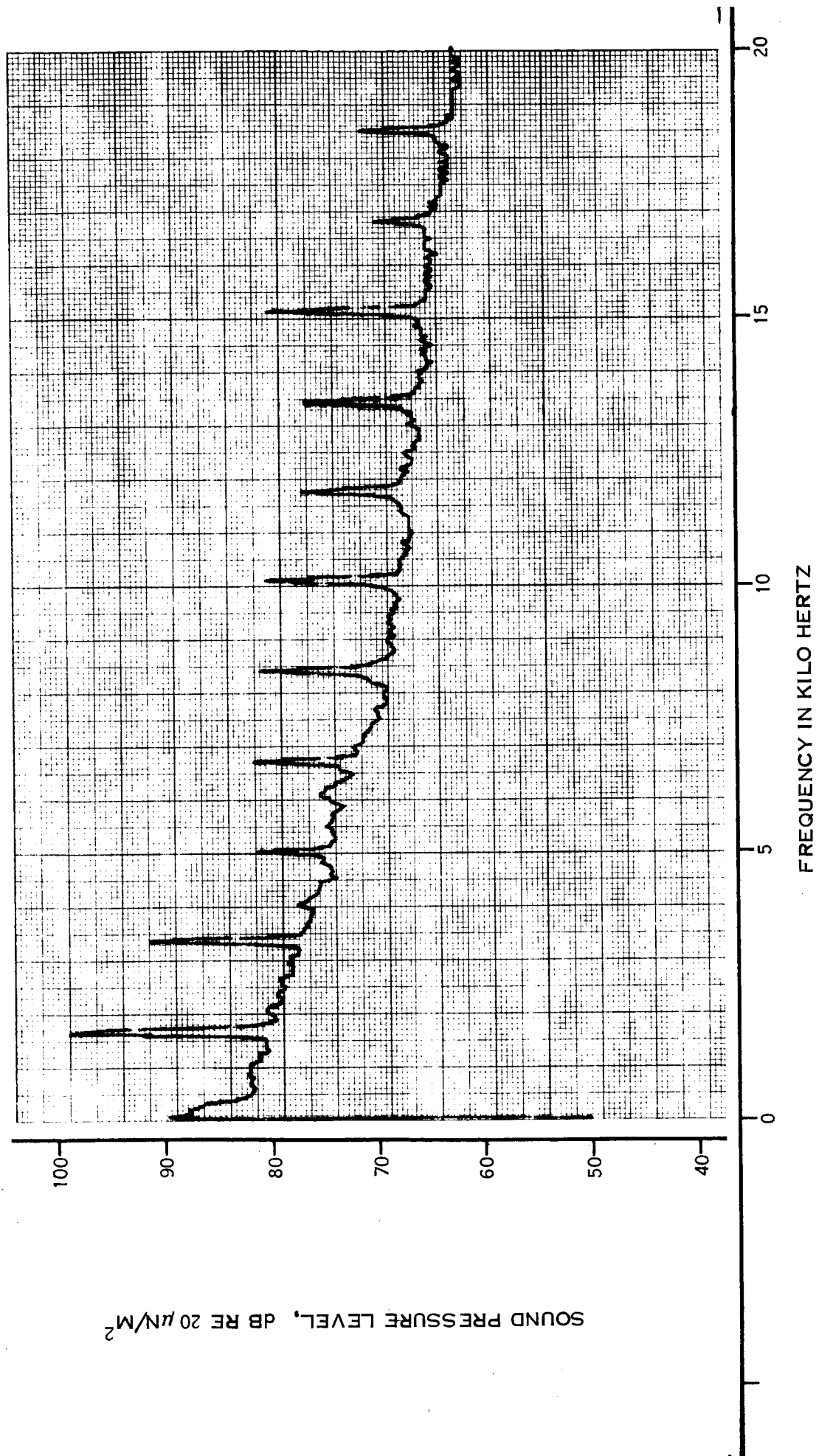
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)



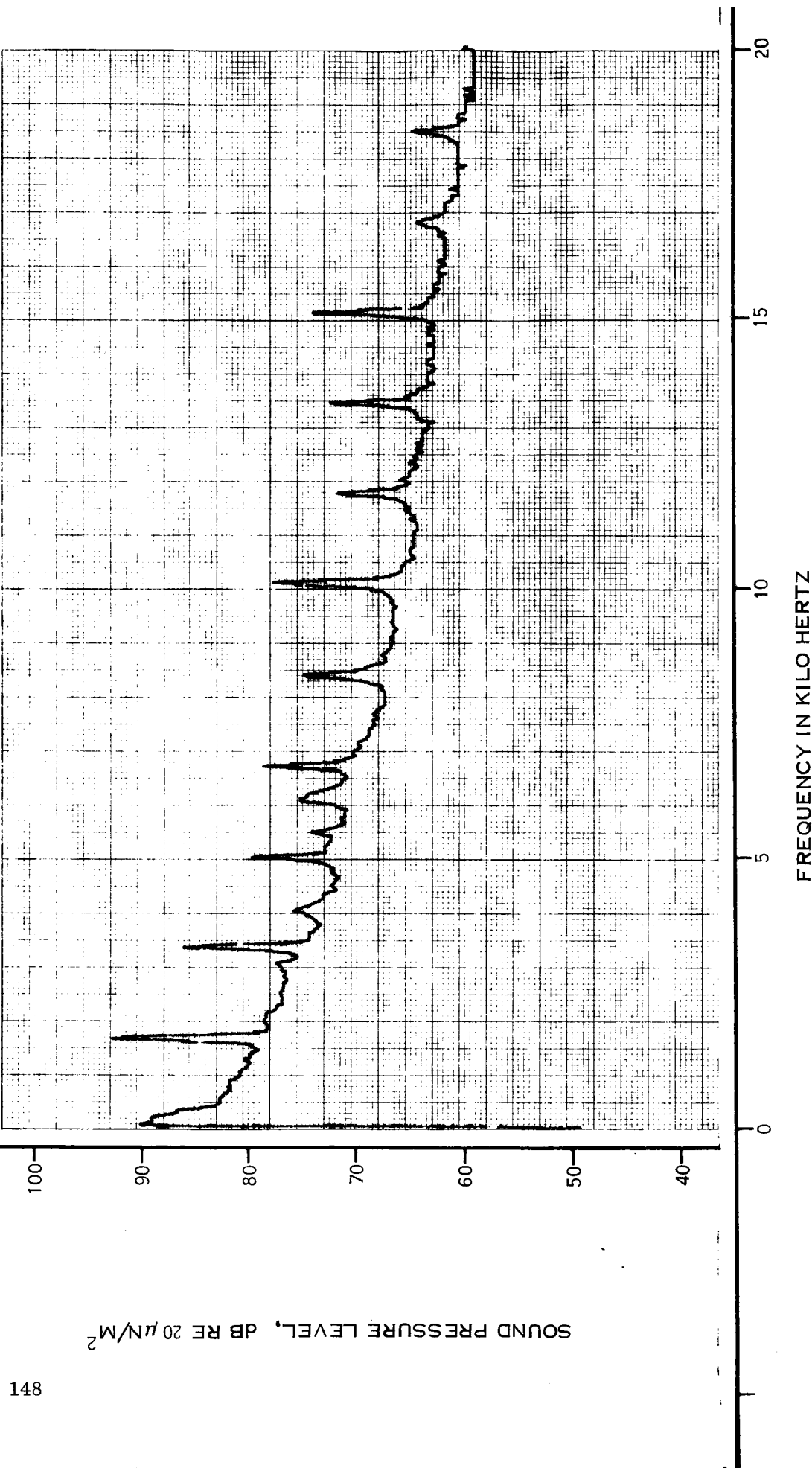
DIETZEN CO.  
LUDEN, PA.

NO. 345 N. DIETZEN GRAPH PAPER  
MILLIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)

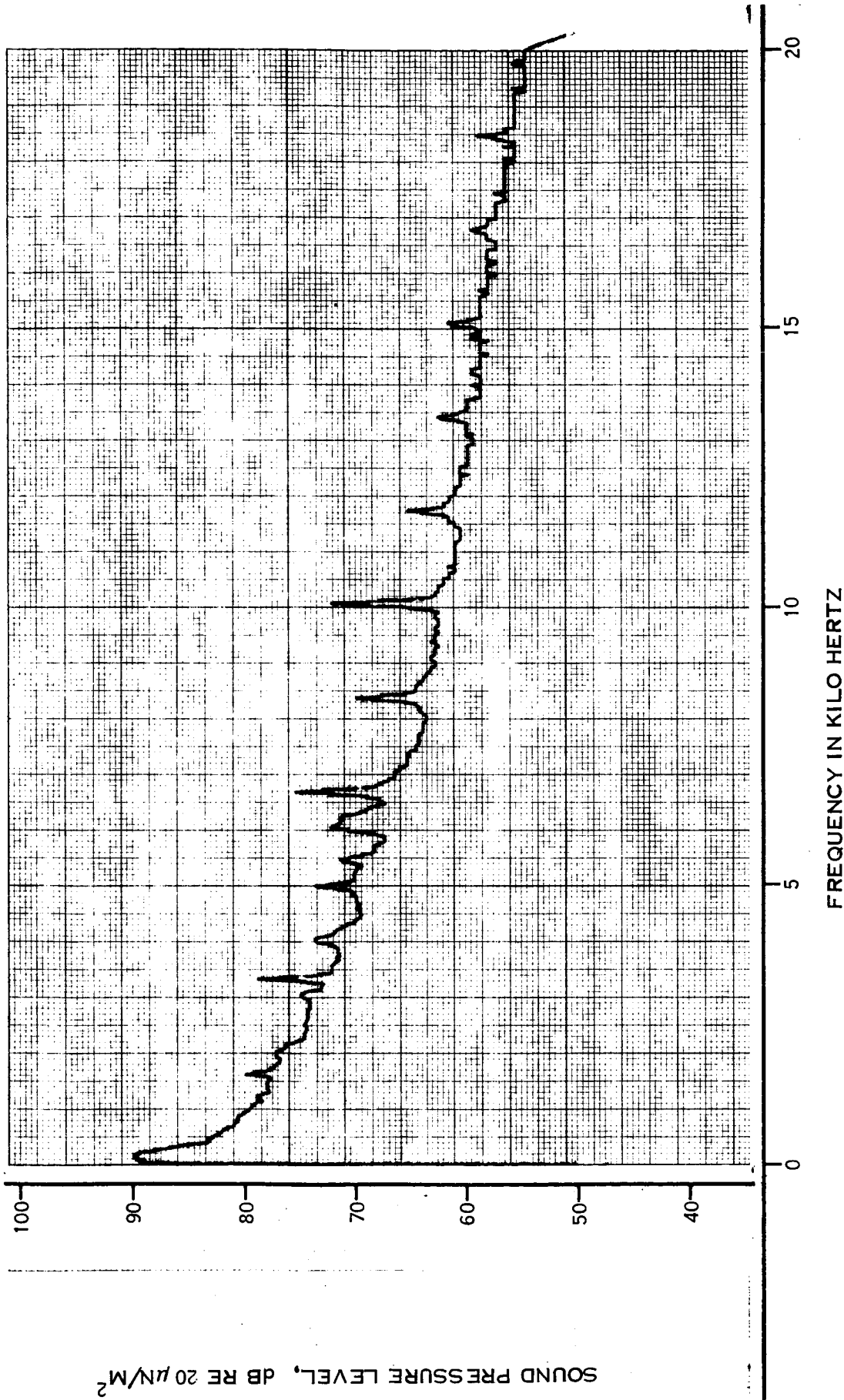


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 140 DEGREES AZIMUTH, 7.62 M (25 FT)

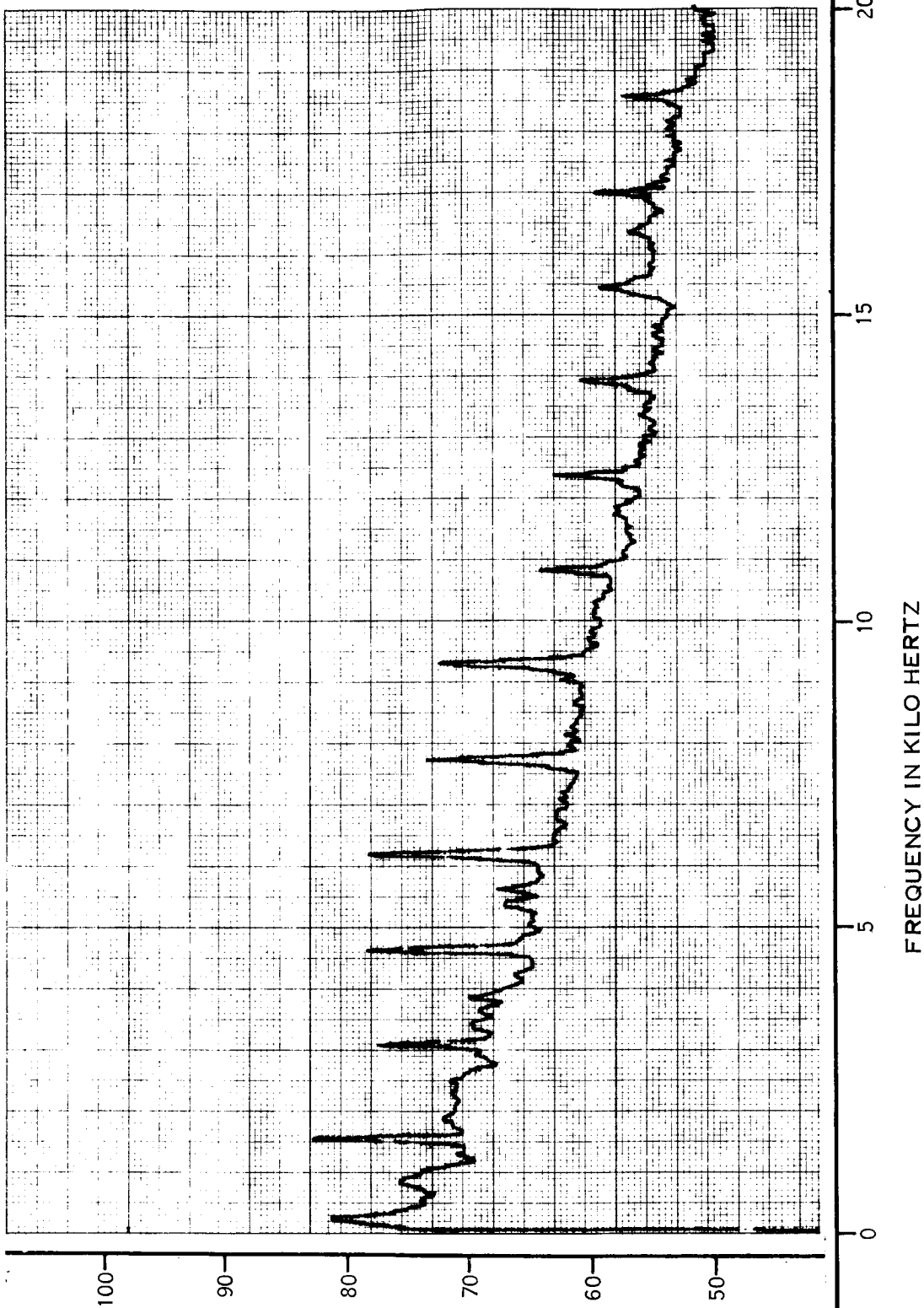
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

DIETZGEN CO.  
MADE IN U. S. A.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 8

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 199 M/SEC (654 FT/SEC)  
MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)

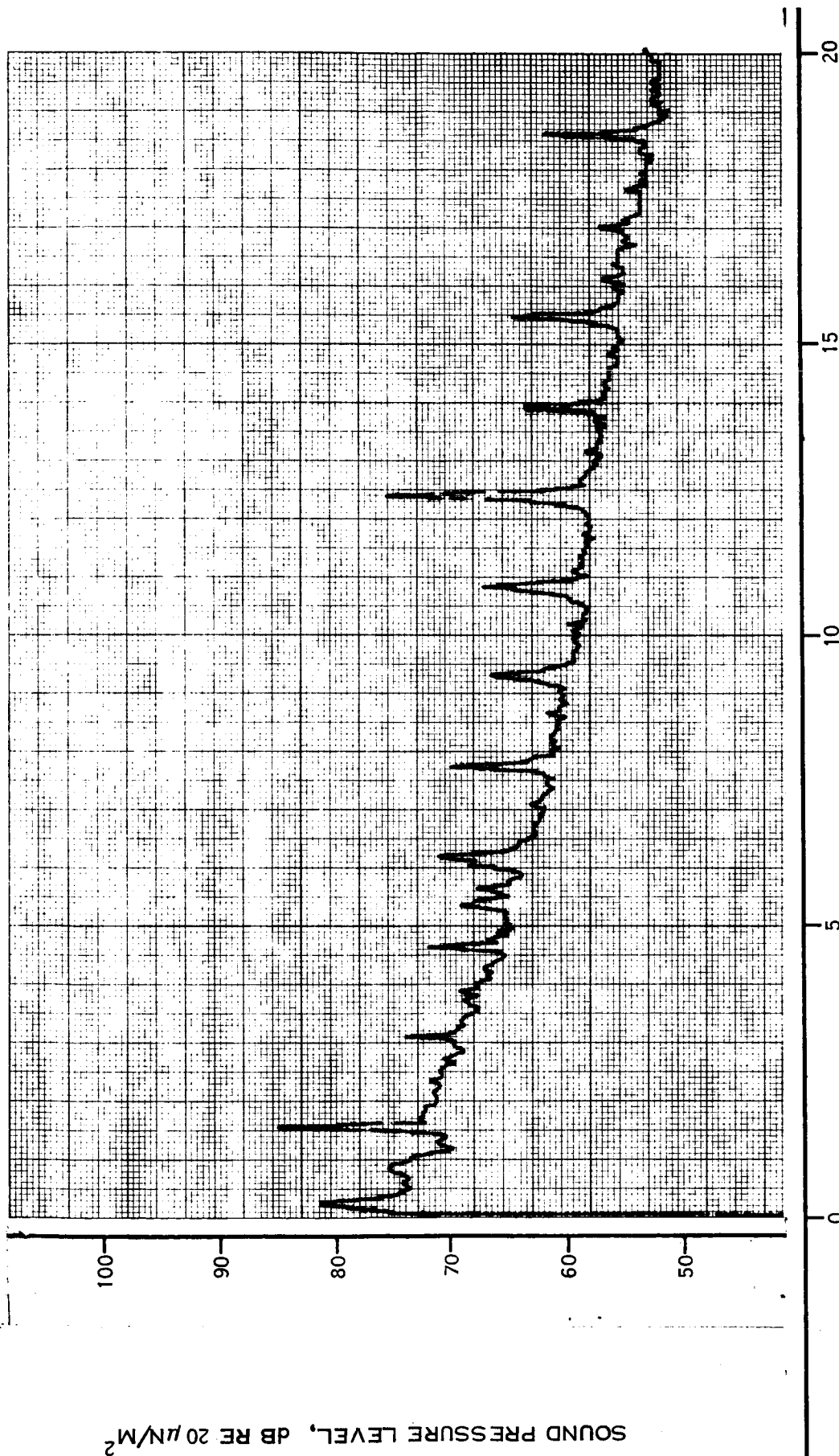
SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N}/\text{M}^2$ 

BLADE ANGLE: 47.1 DEGREES  
 TIP SPEED: 183 M/SEC (599 FT/SEC)  
 MICROPHONE LOCATION: 0 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
 512 ENSEMBLES  
 TEST CONDITION NUMBER: 10

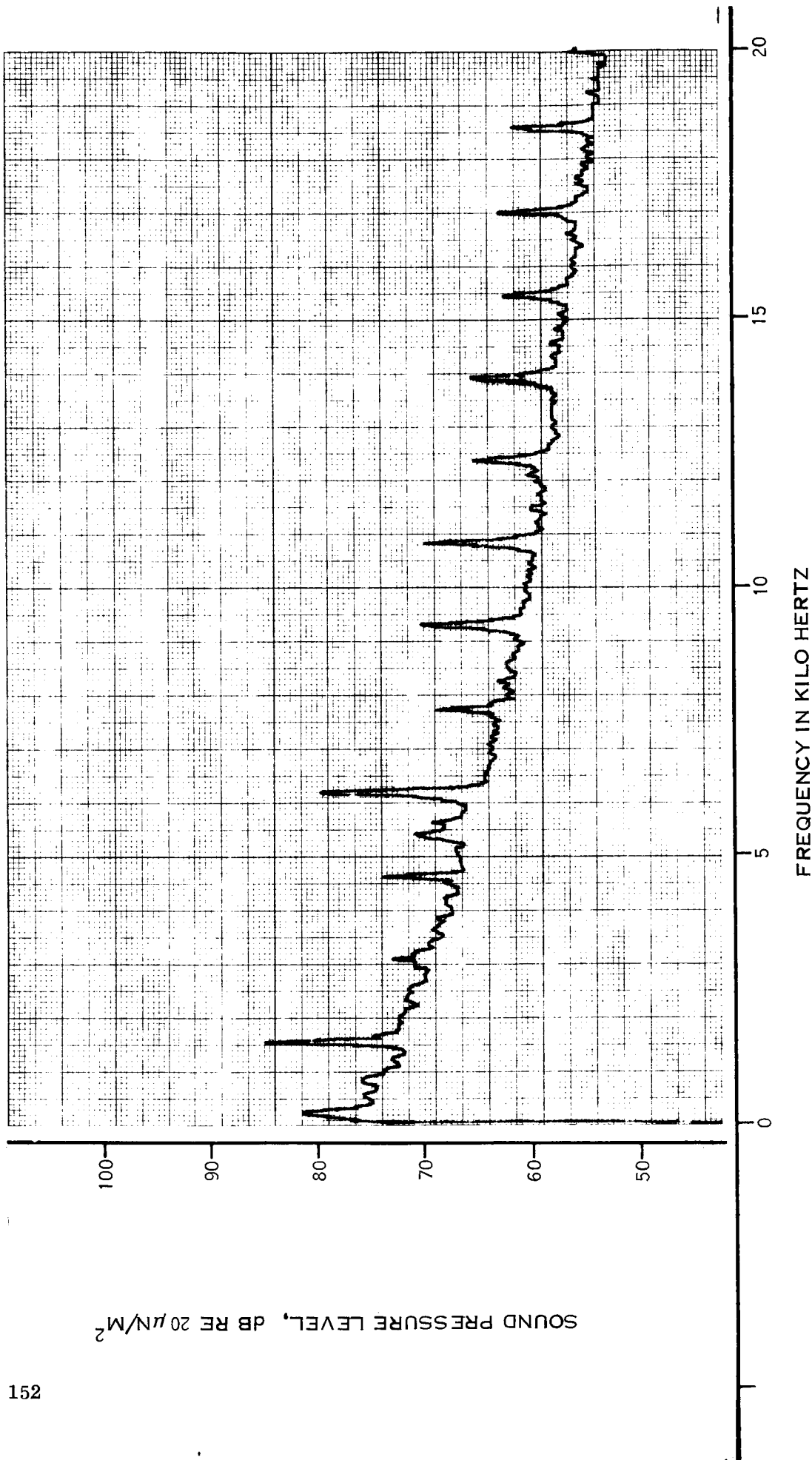
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

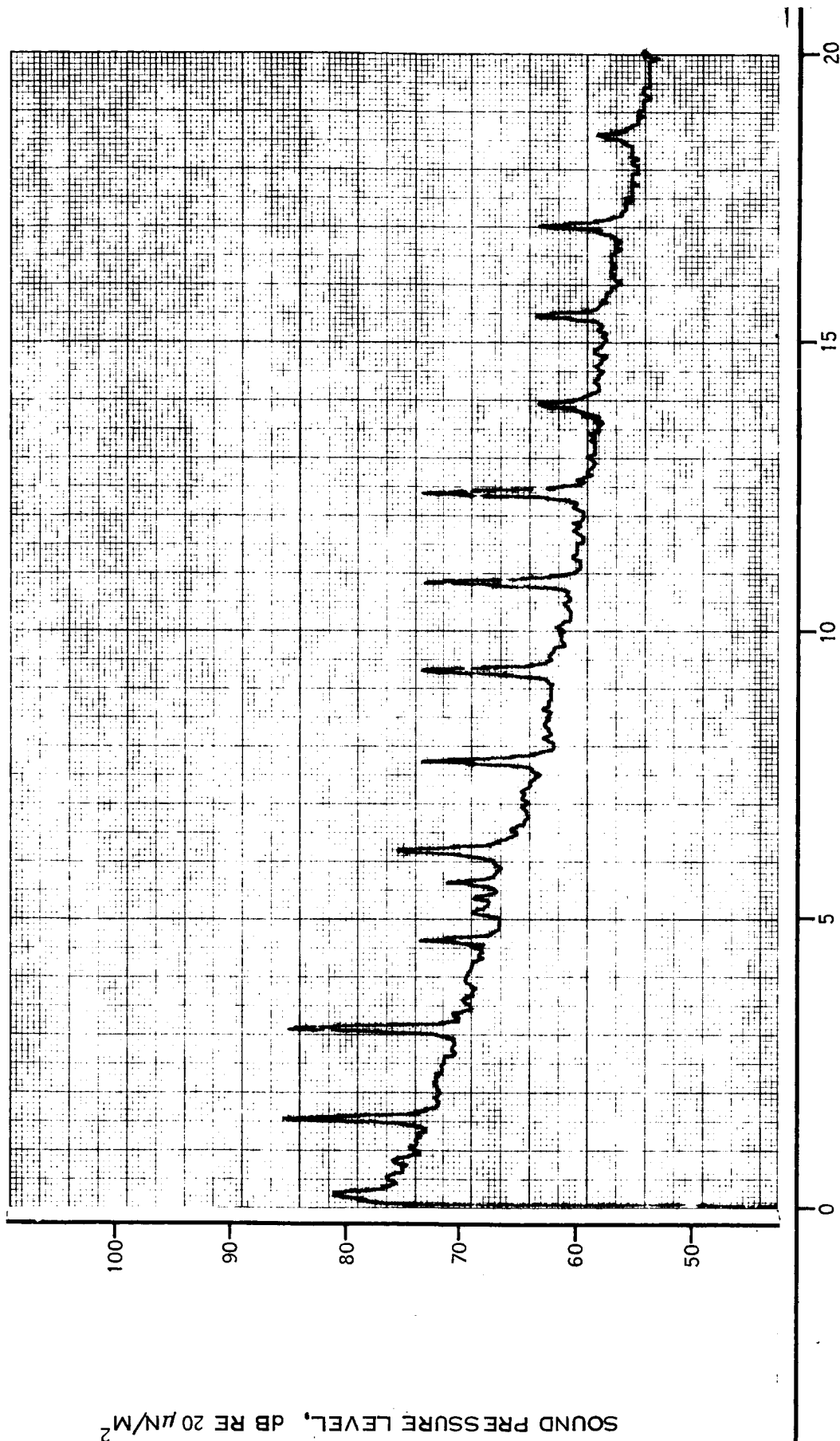


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)

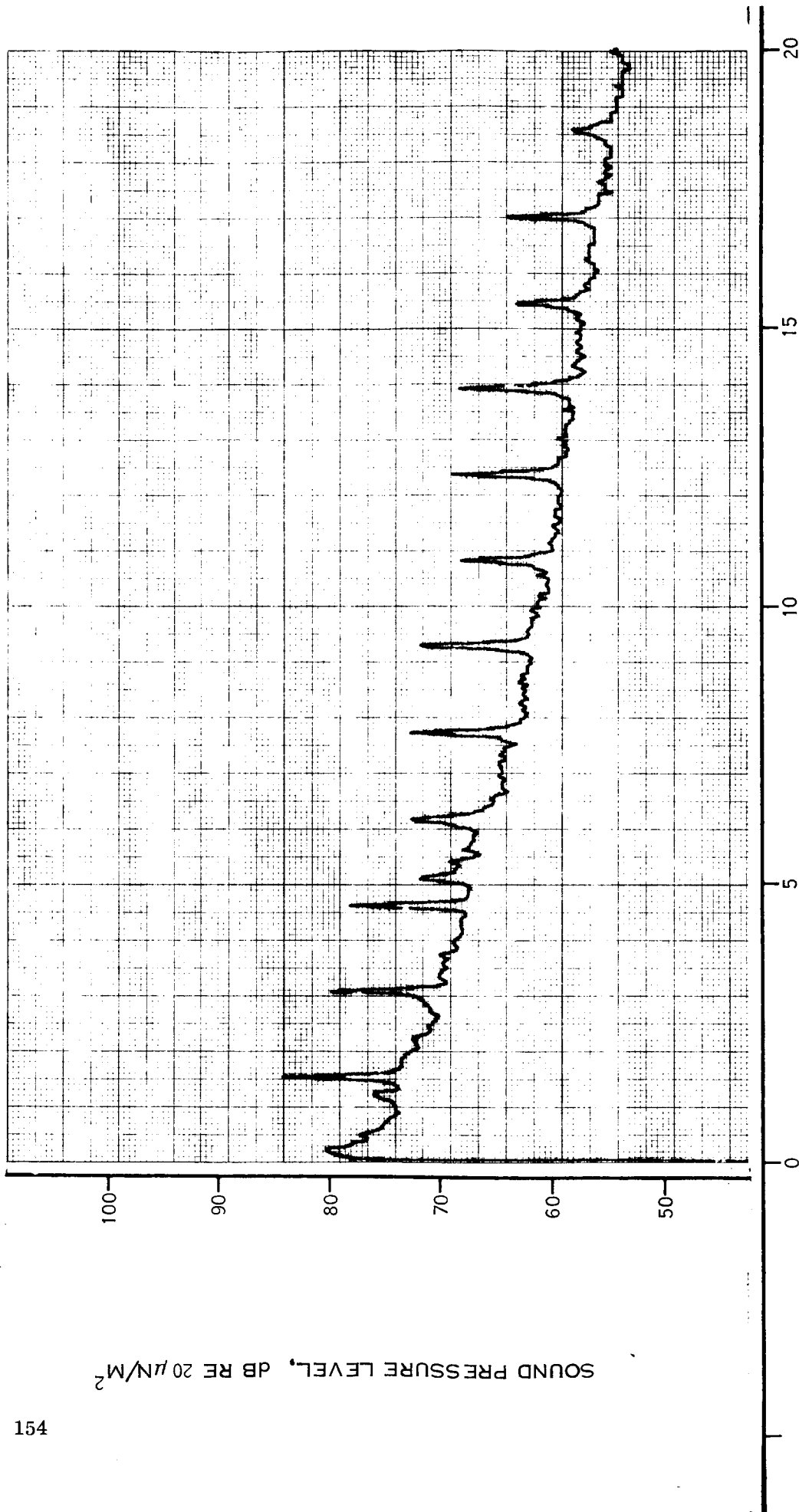
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGEN DIETZGEN CO  
MALL N J



BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10



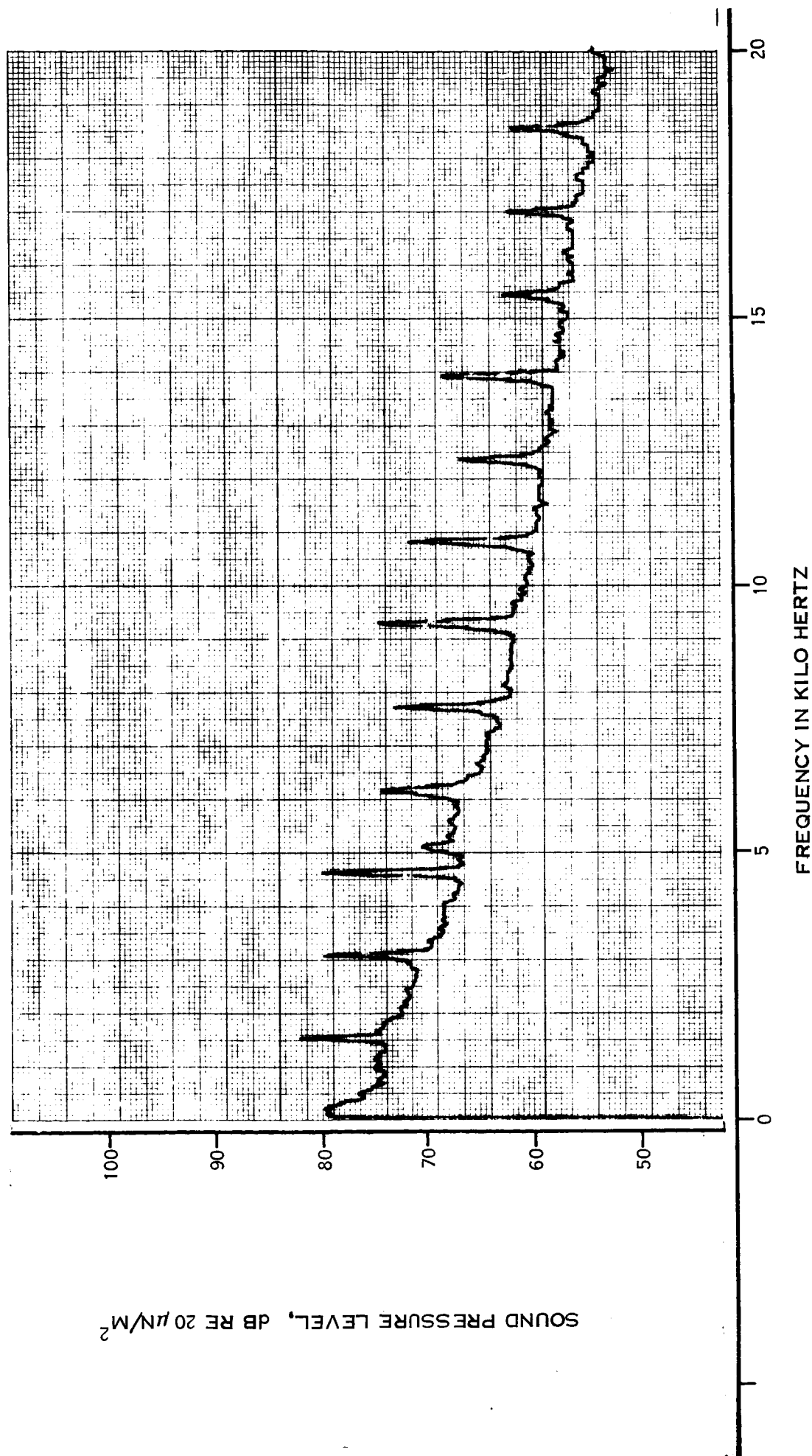
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)



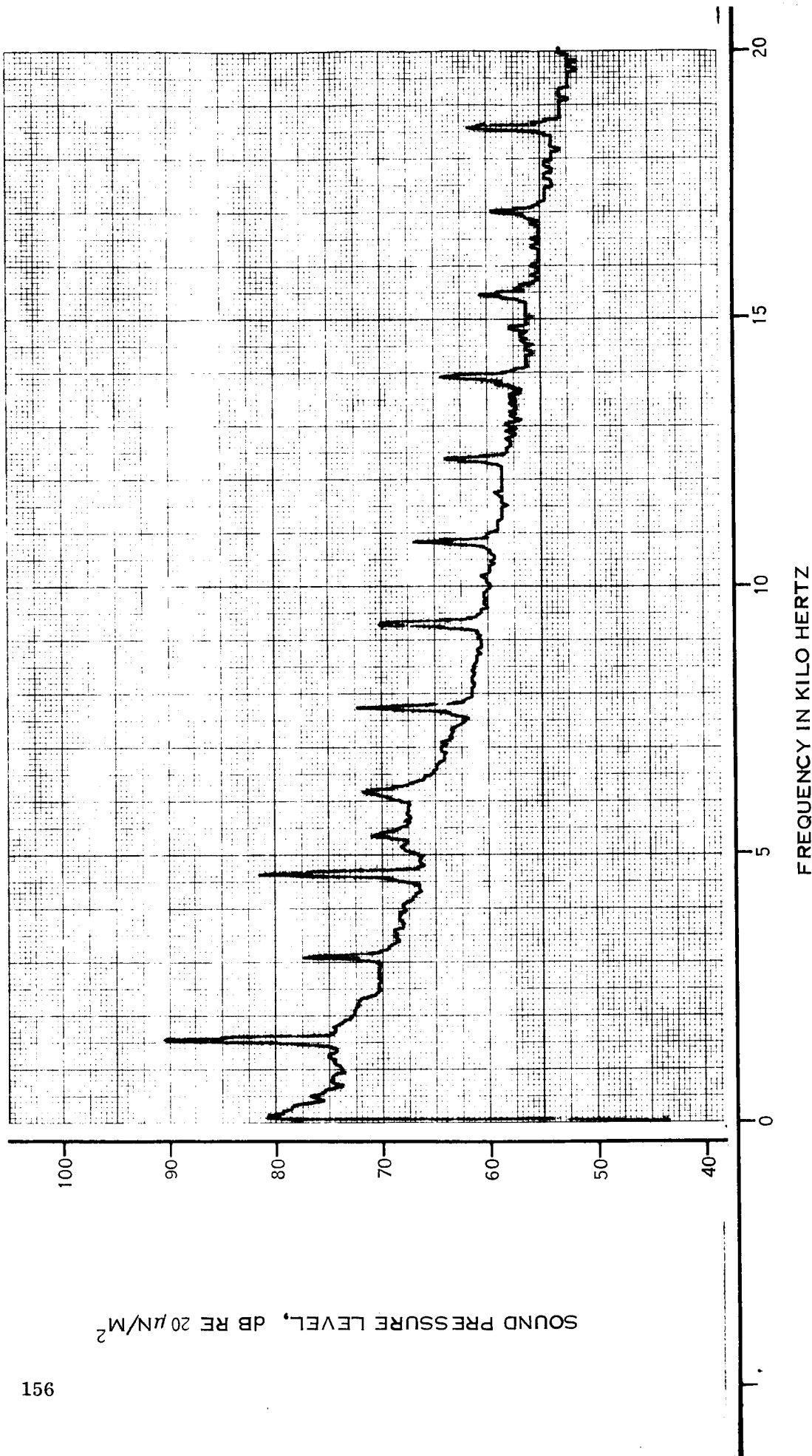
ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
W. F. A.



BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

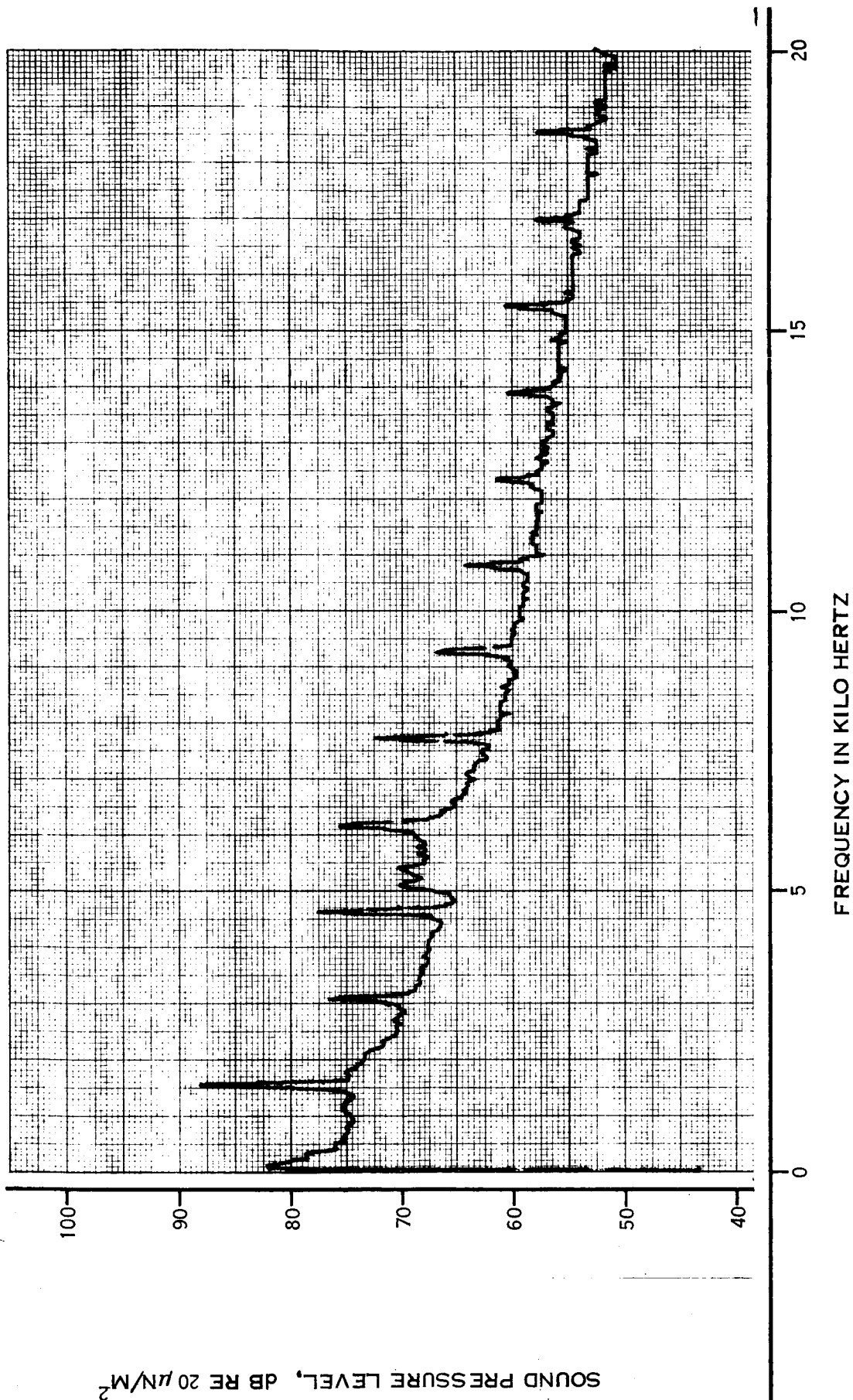


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

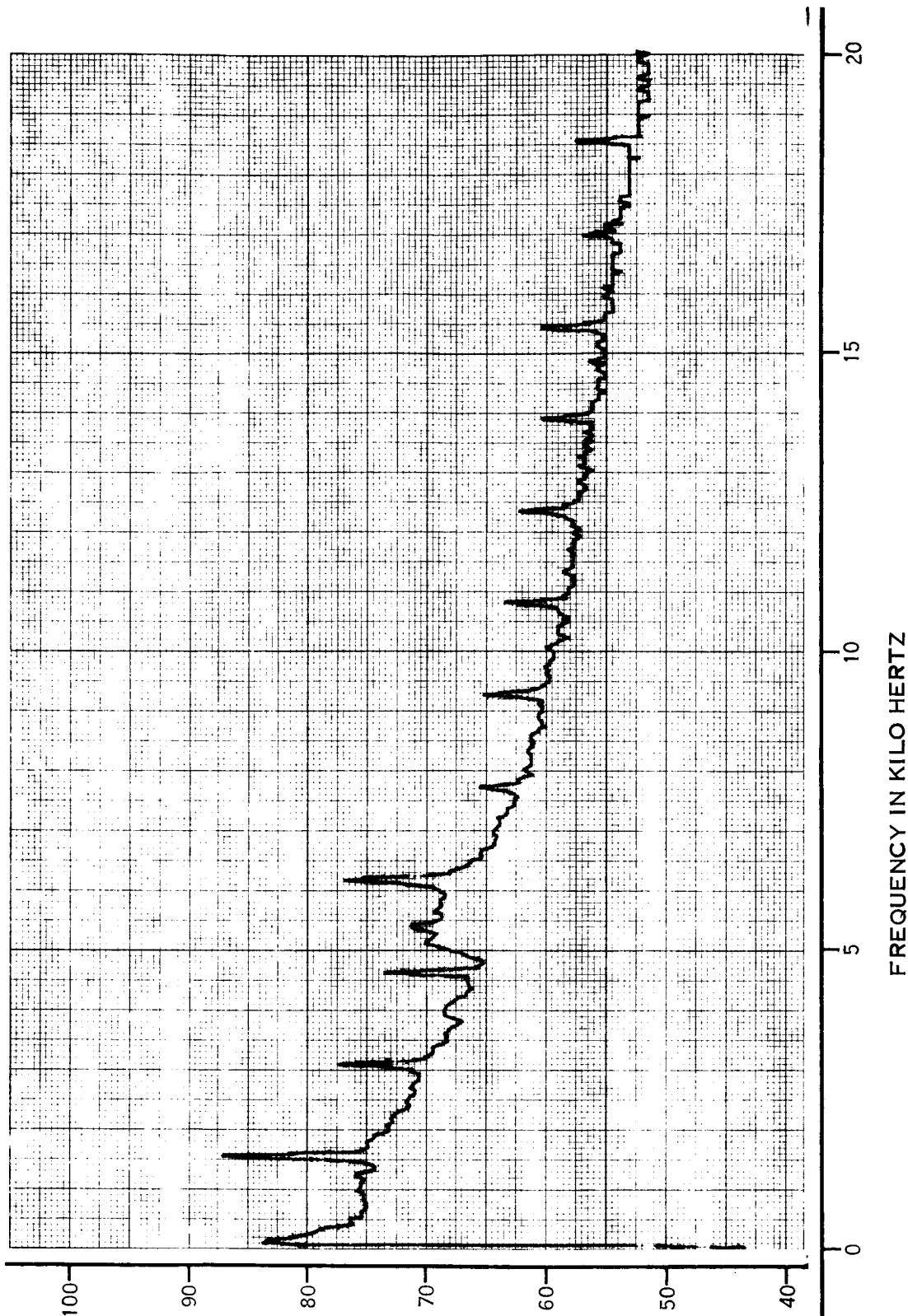
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

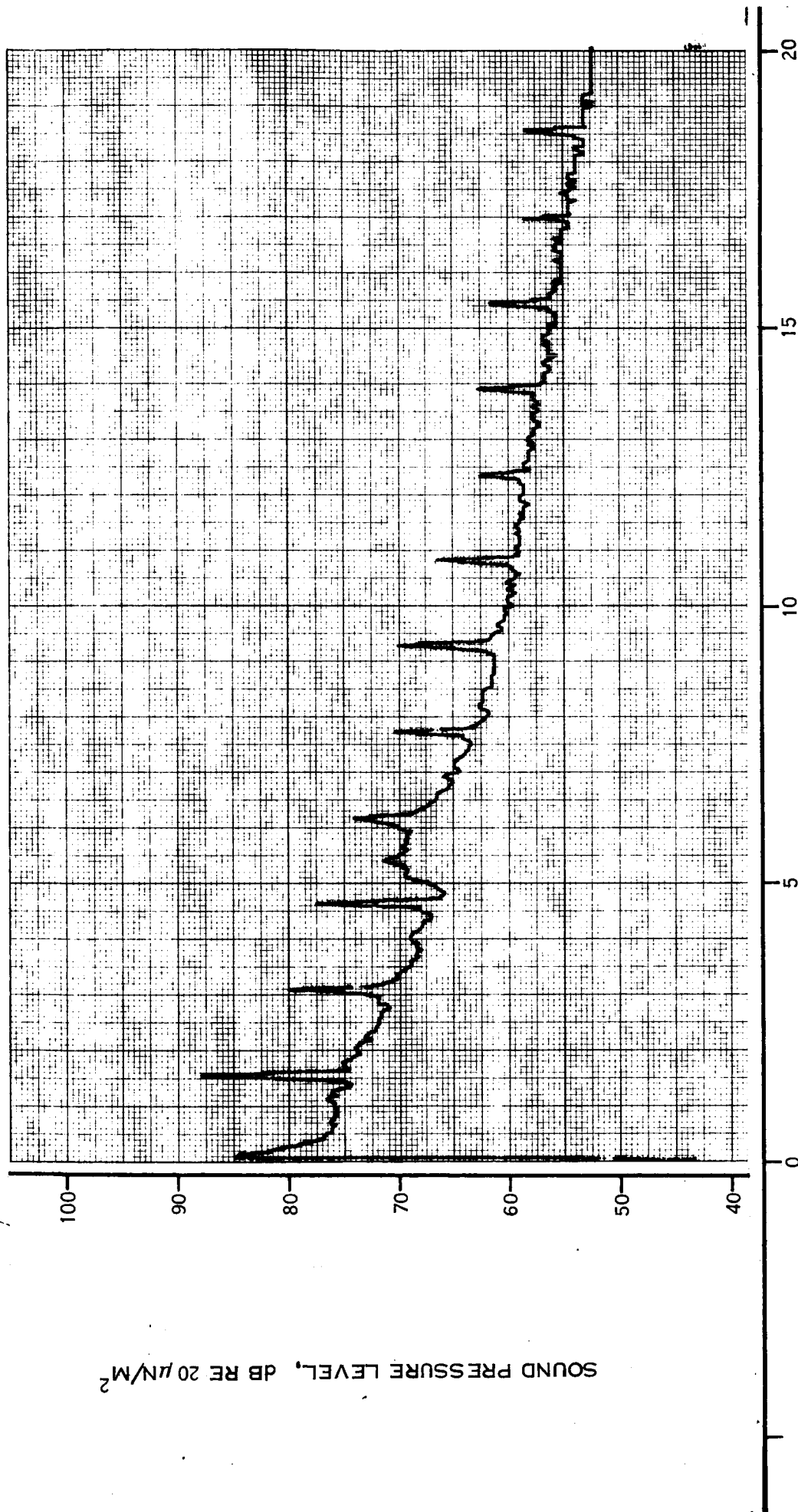
SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N}/\text{M}^2$ 

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

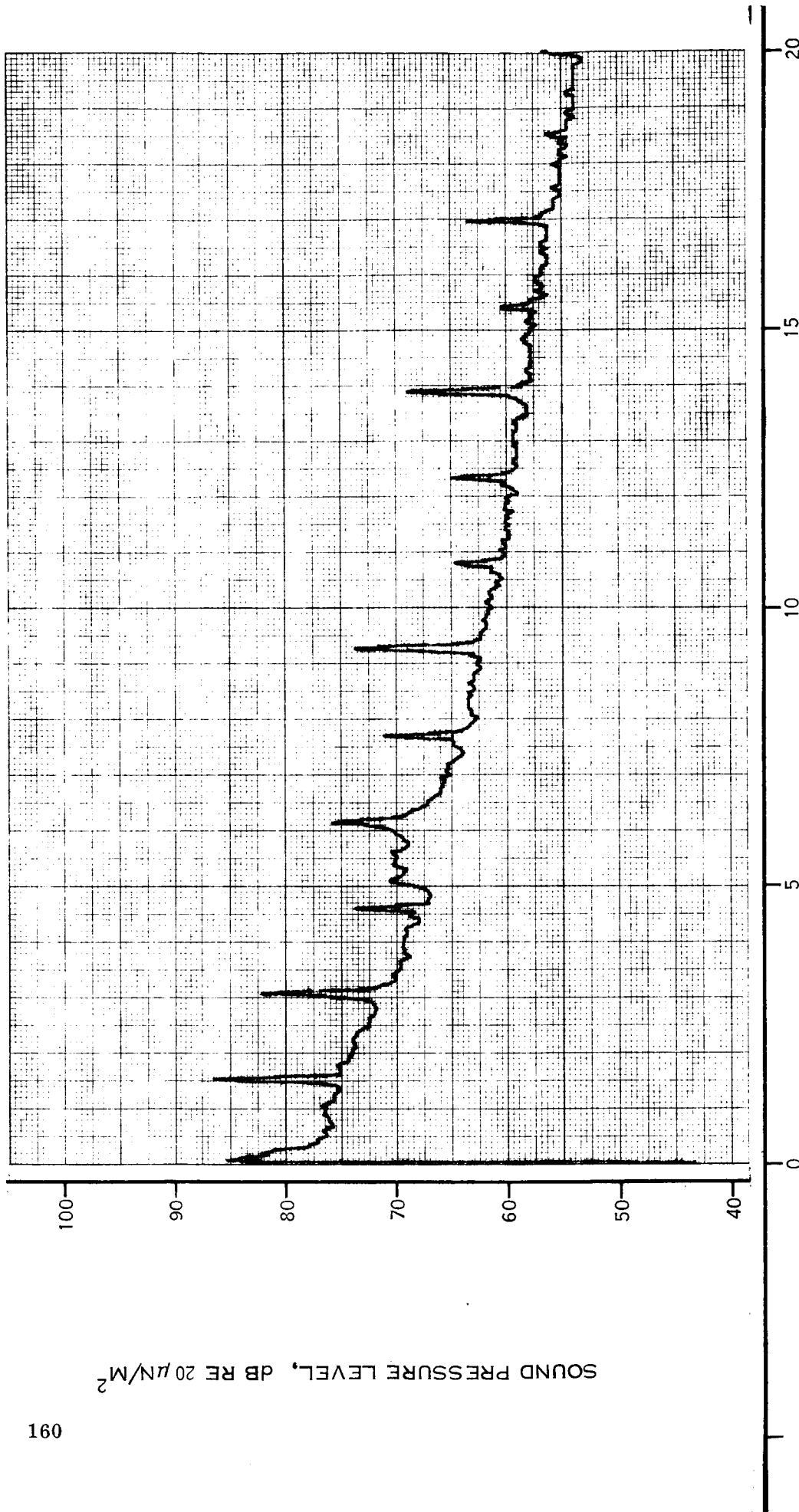
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MADE IN U.S.A.

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

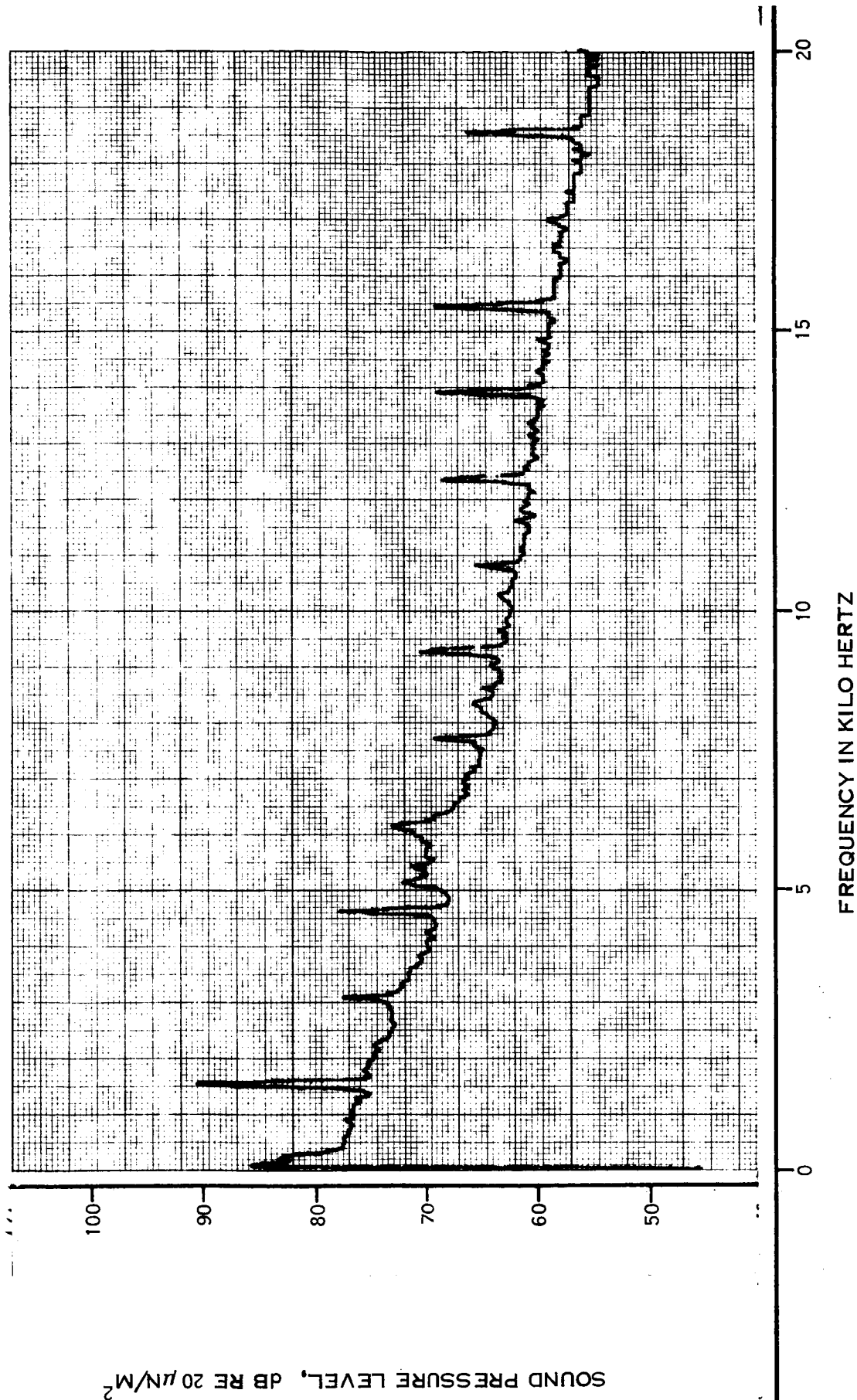


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 100 DEGREES AZIMUTH, 7.62 M (25 FT)

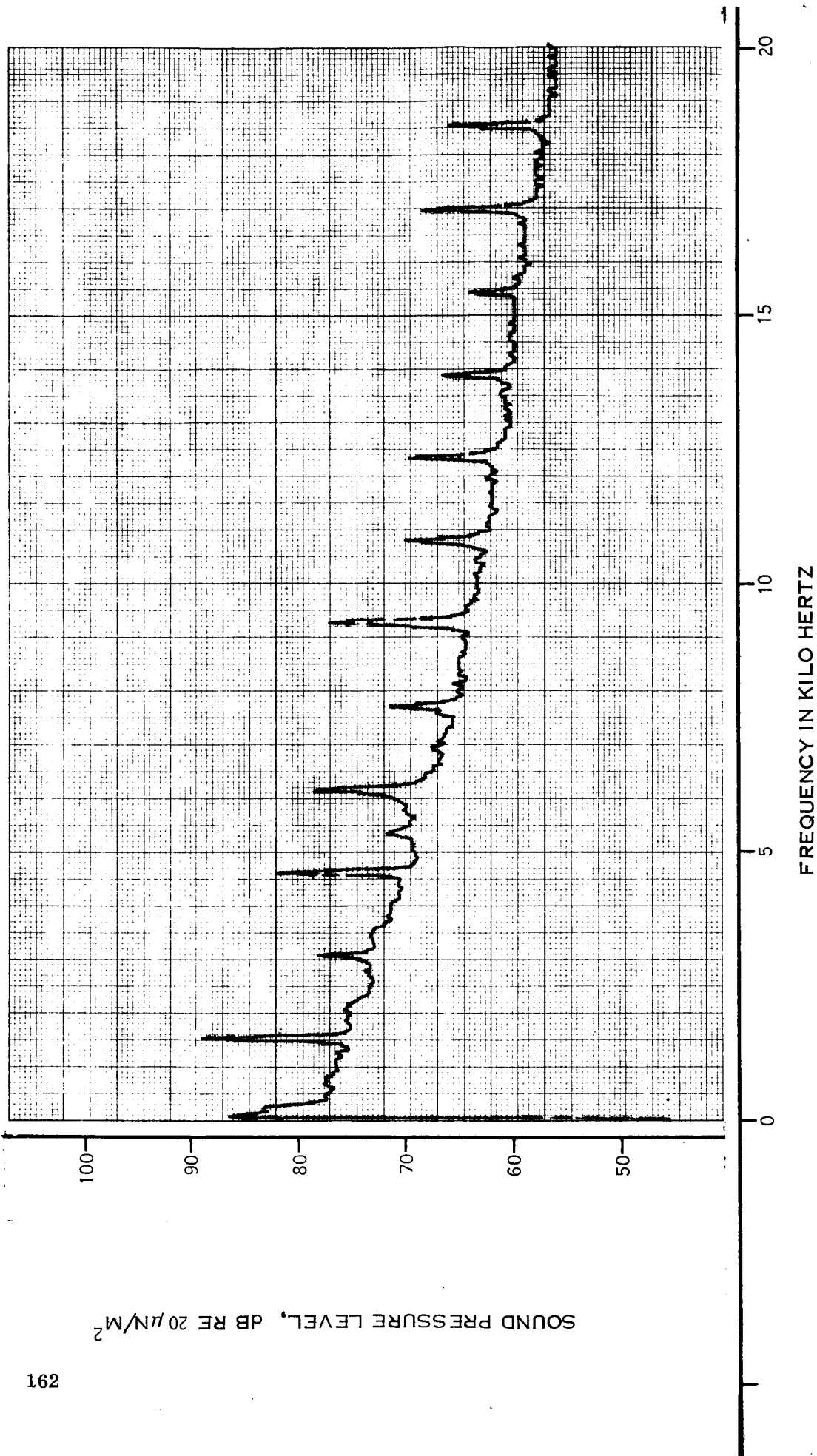
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NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)



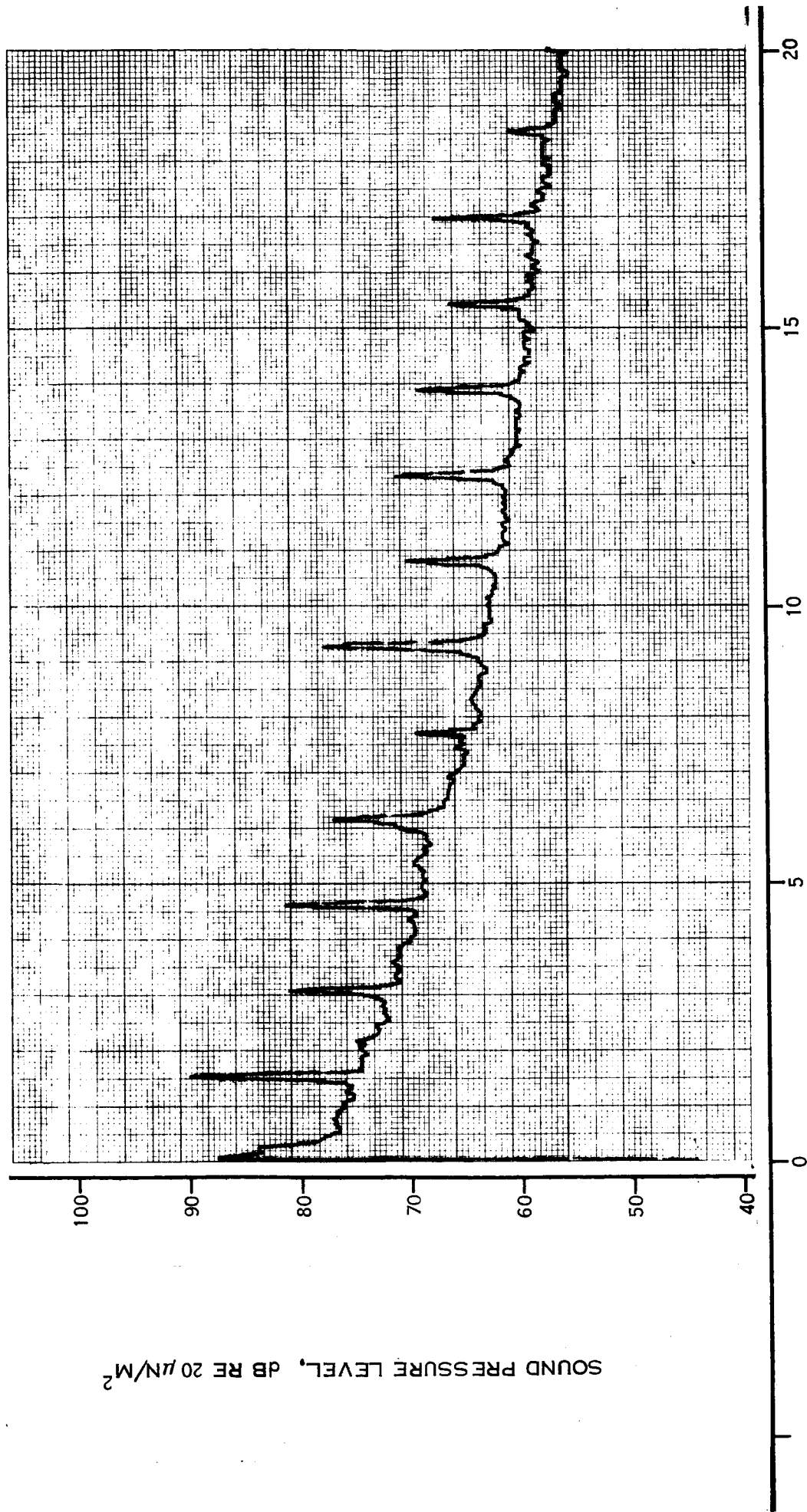
BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10



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NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

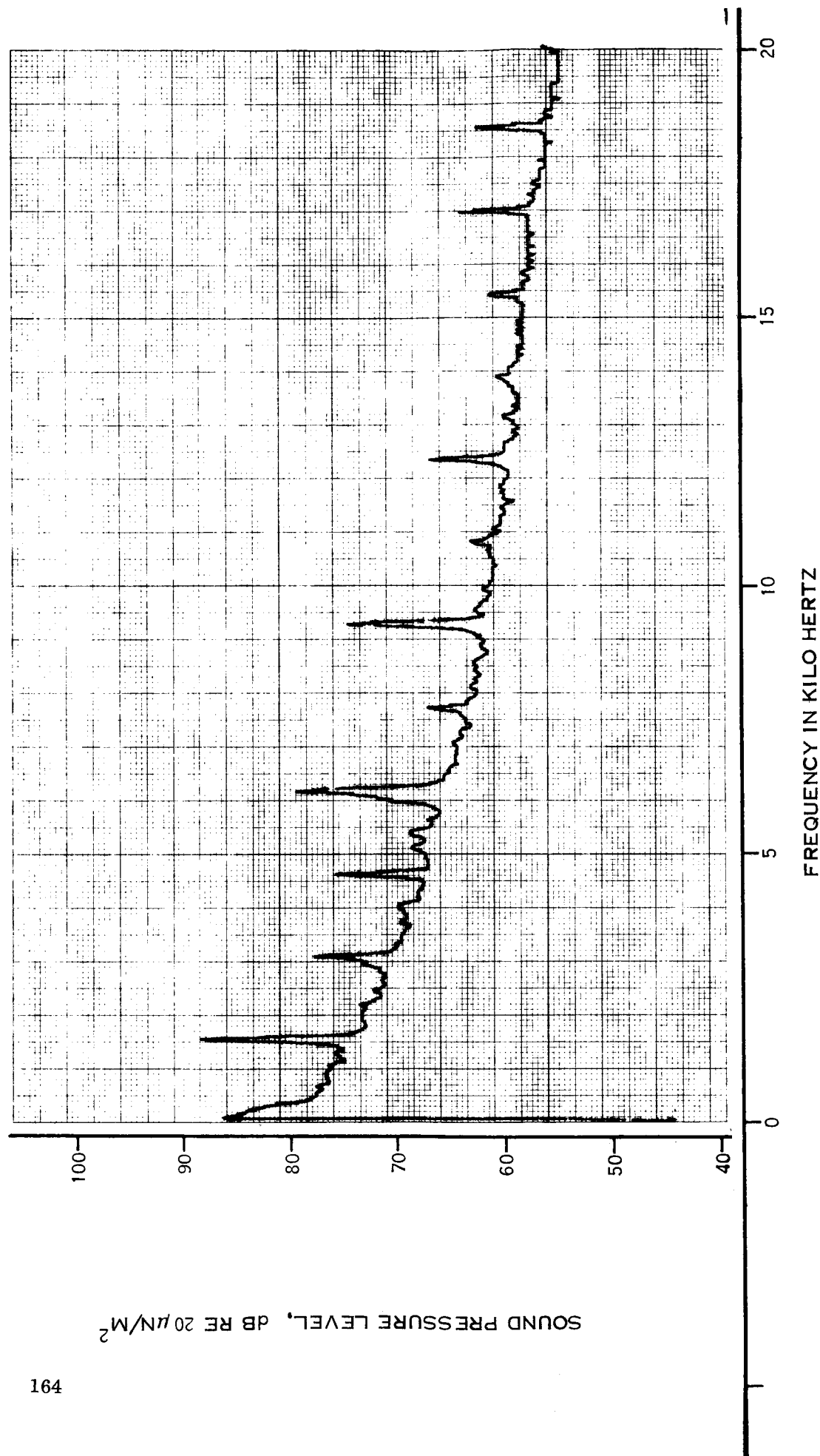


SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N}/\text{M}^2$

FREQUENCY IN KILO HERTZ

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)

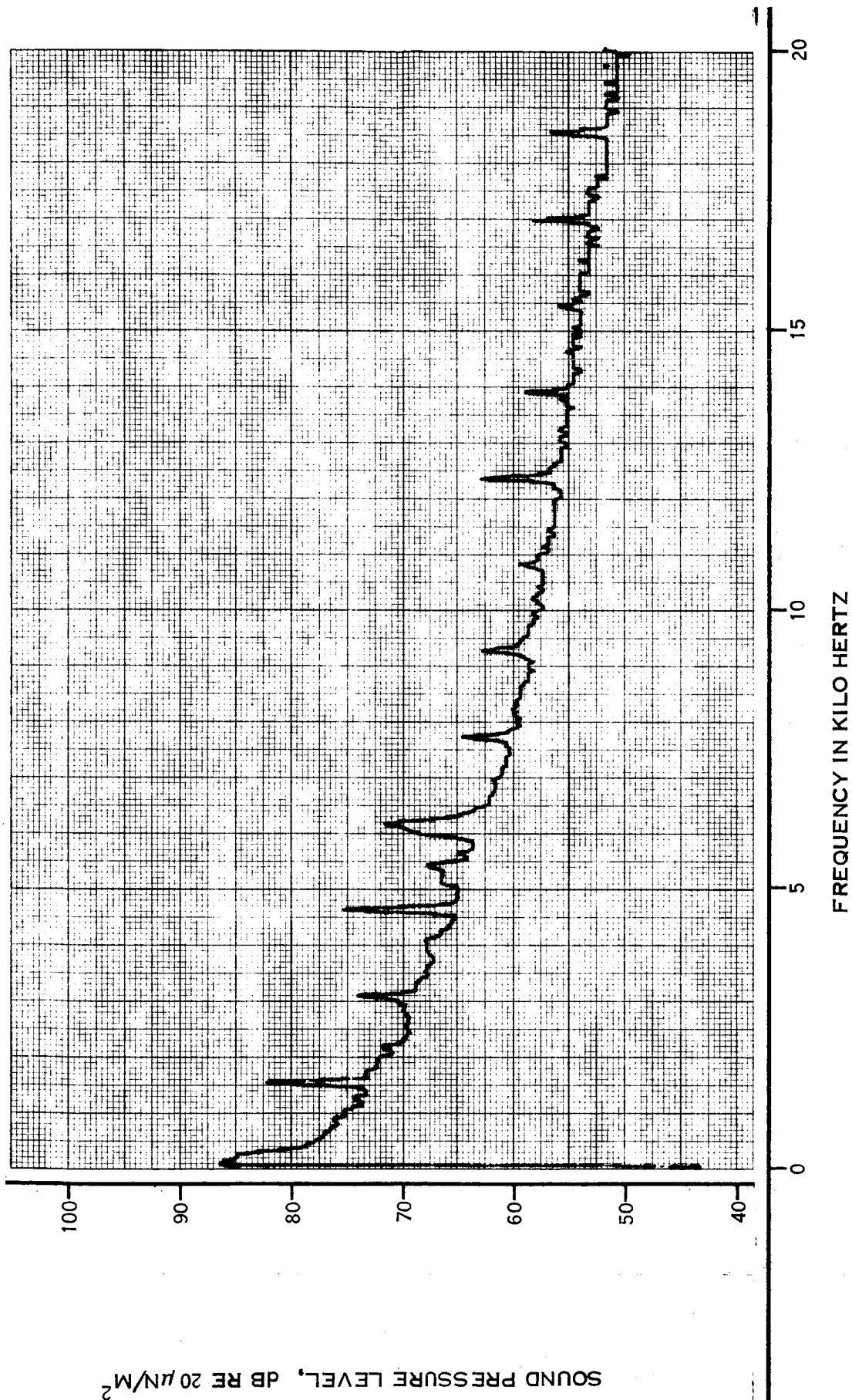


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 140 DEGREES AZIMUTH, 7.62 M (25 FT)

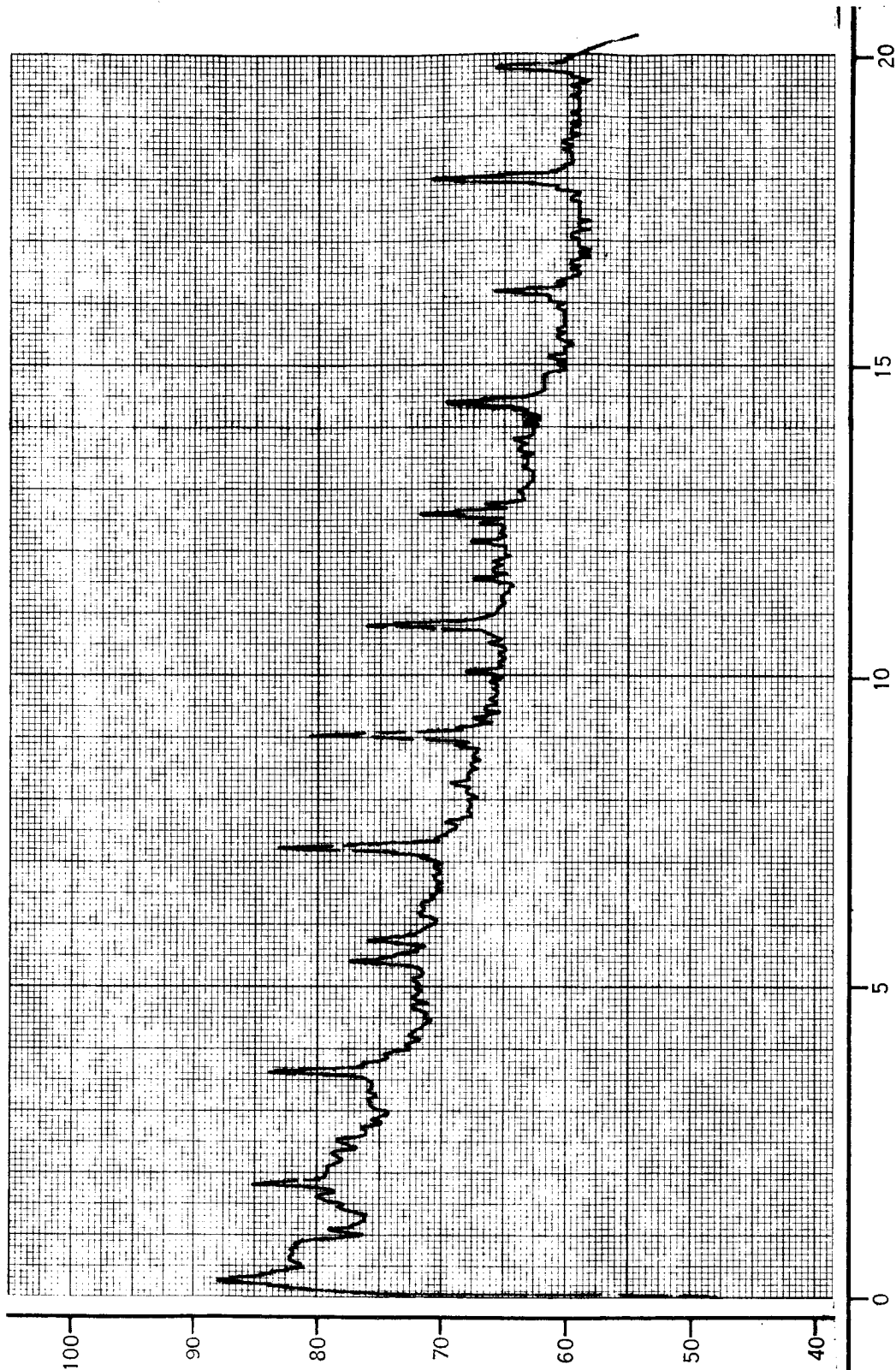
ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
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BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 183 M/SEC (599 FT/SEC)  
MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 10



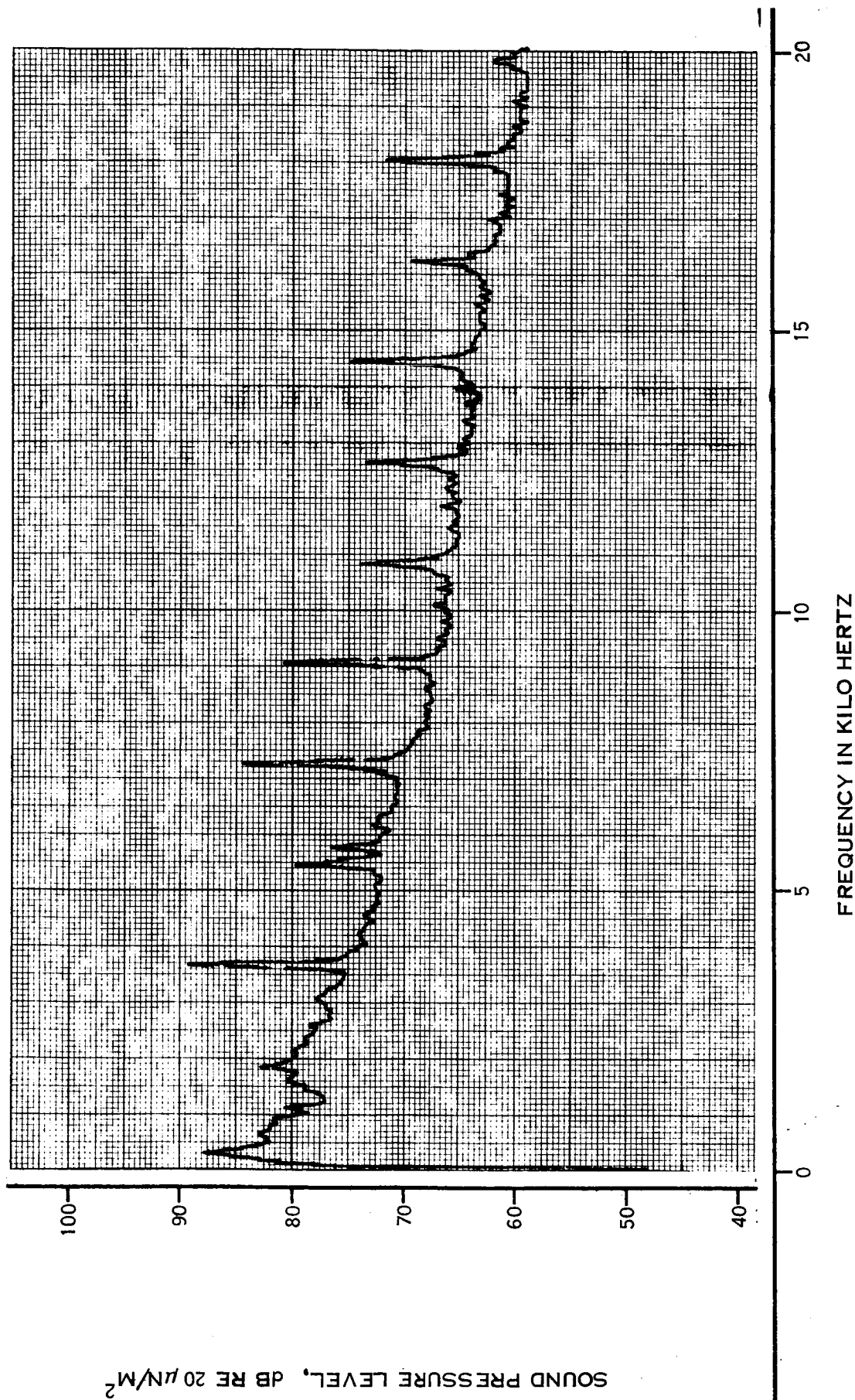
FREQUENCY IN KILO HERTZ

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
MICROPHONE LOCATION: 0 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER

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BLADE ANGLE: 47.1 DEGREES

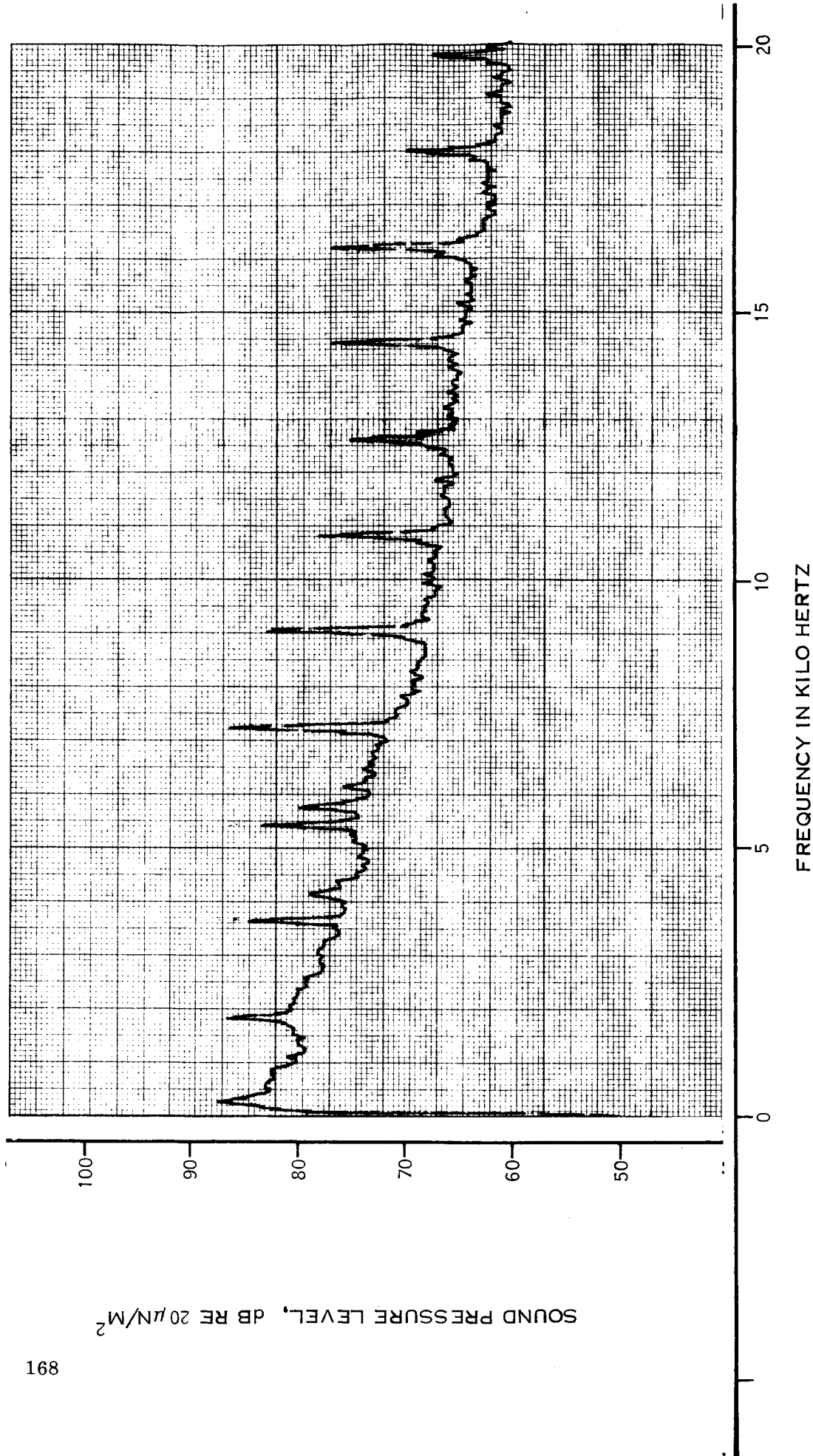
TIP SPEED: 212 M/SEC (697 FT/SEC)

MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

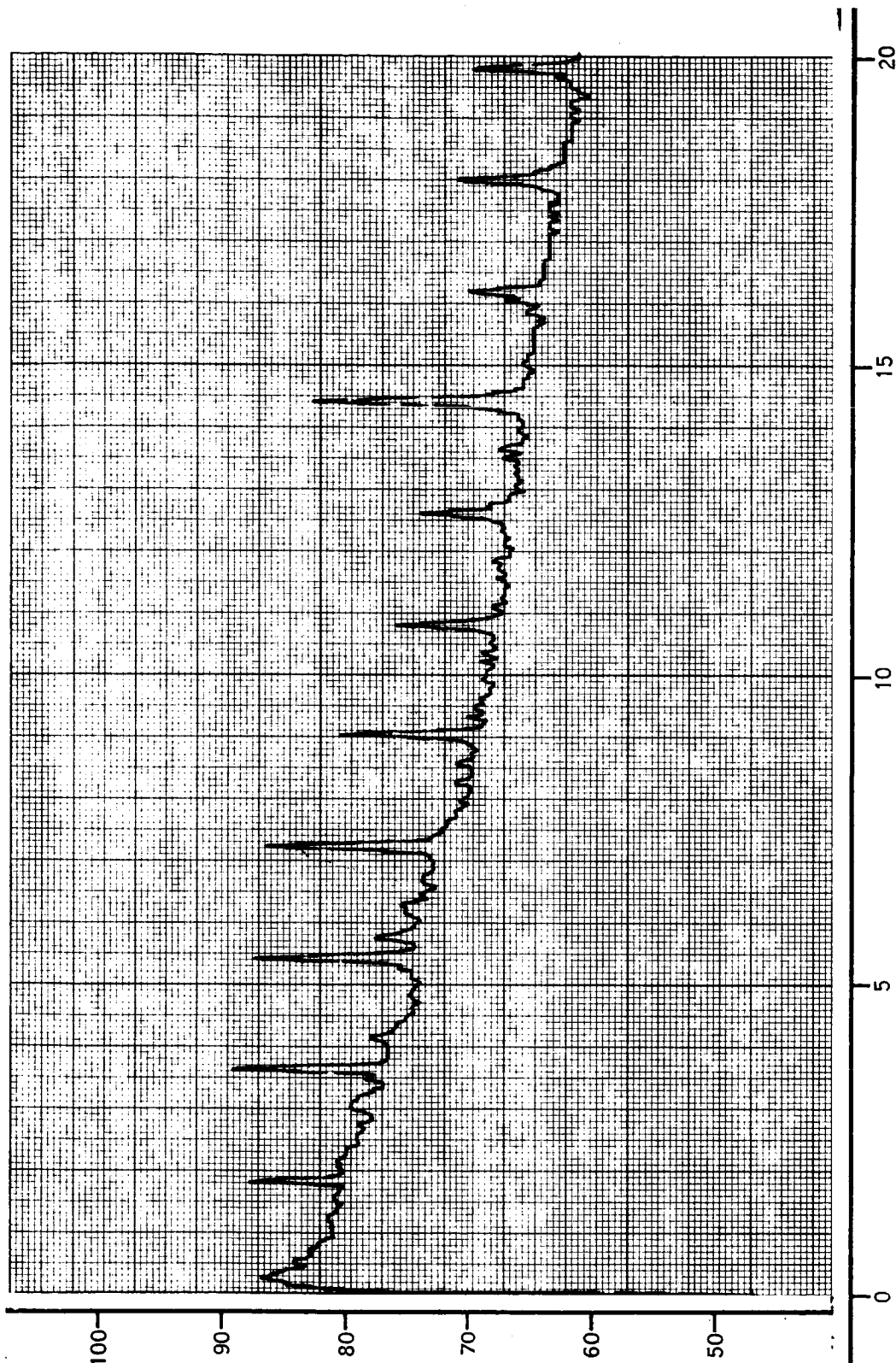
TEST CONDITION NUMBER: 11

EUGENE DIETZGEN CO.  
MADE IN U.S.A.NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER50 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)



NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

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BLADE ANGLE: 47.1 DEGREES

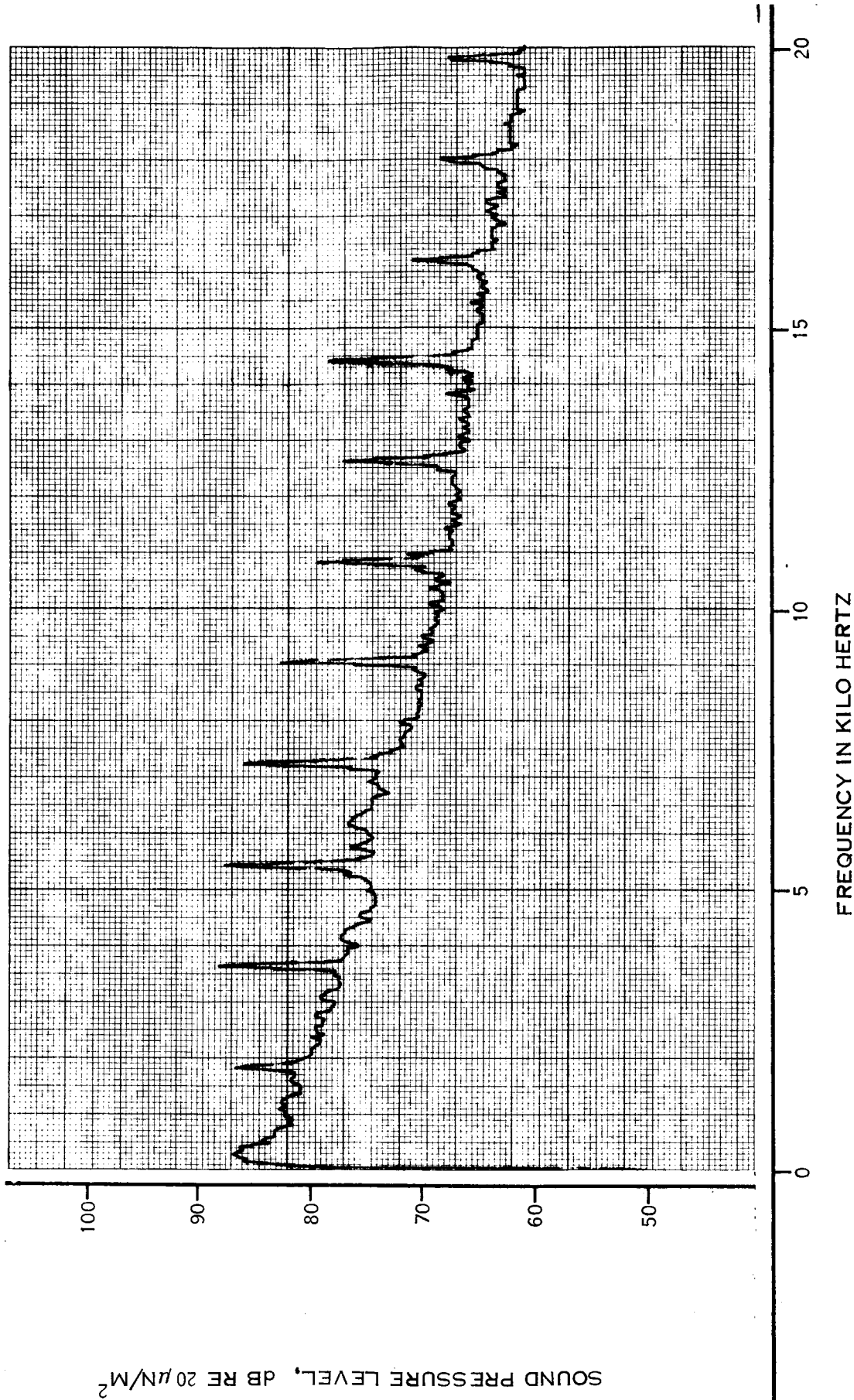
TIP SPEED: 212 M/SEC (697 FT/SEC)

MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 11



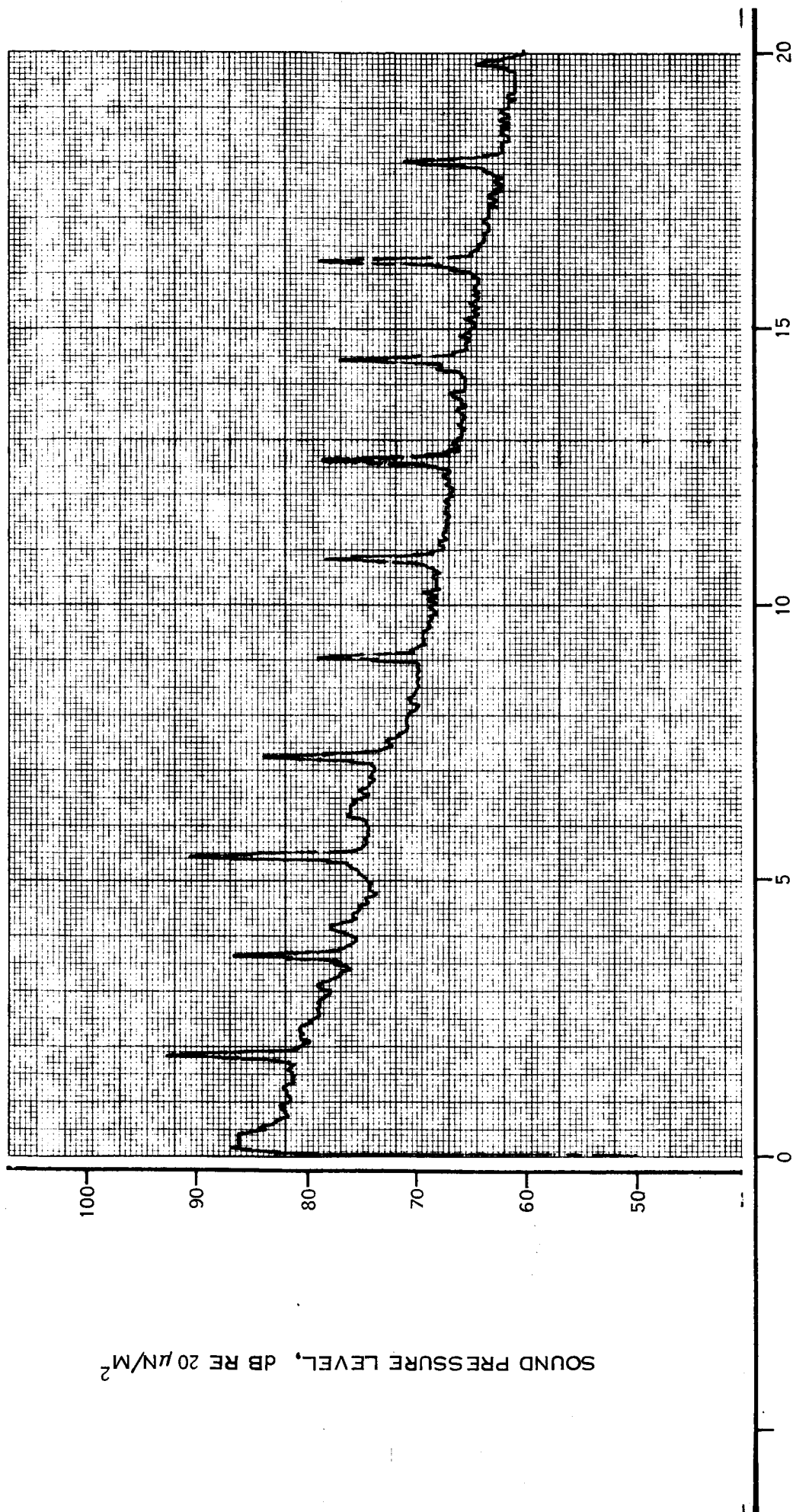
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)



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NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



BLADE ANGLE: 47.1 DEGREES

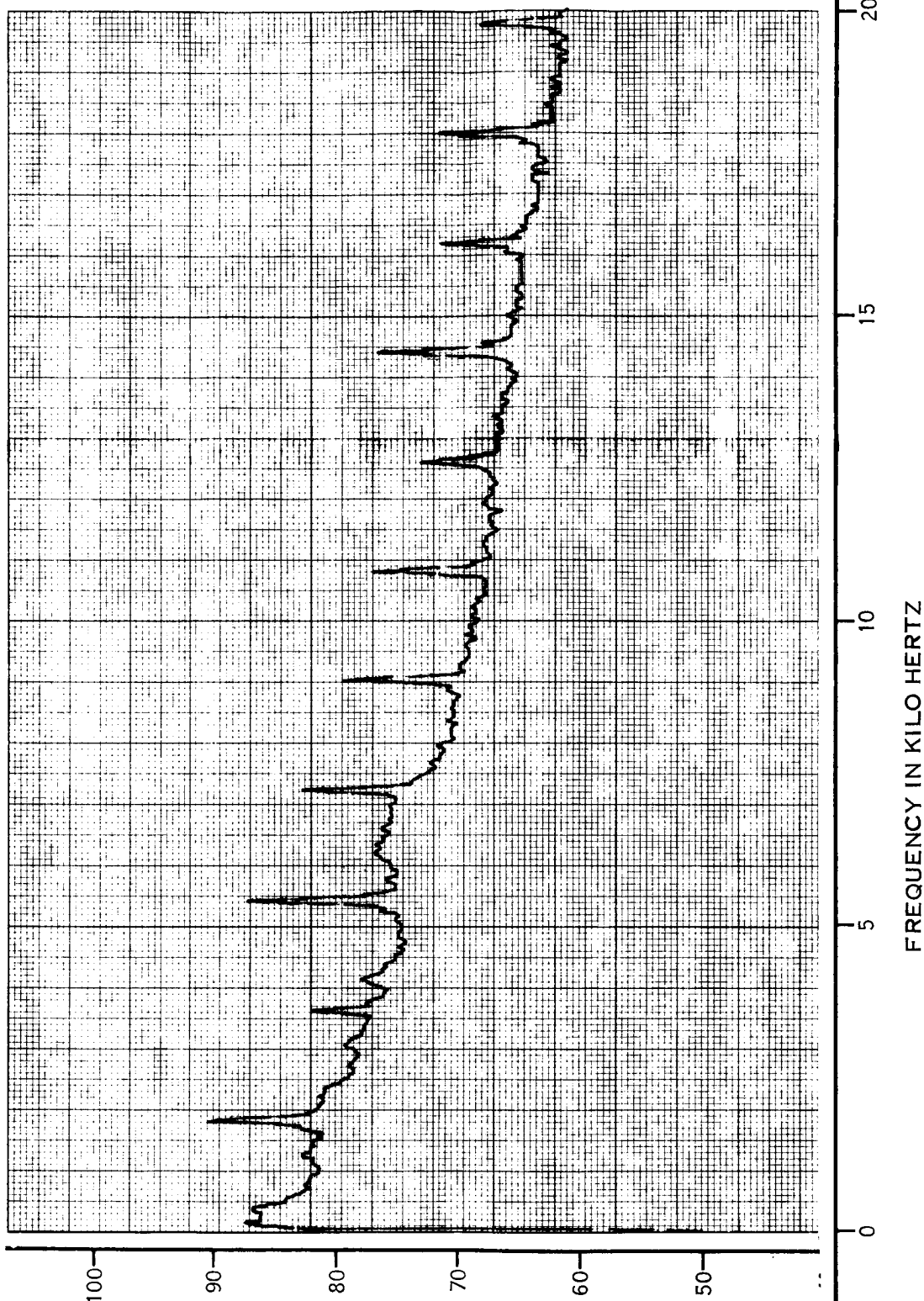
TIP SPEED: 212 M/SEC (697 FT/SEC)

MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 11

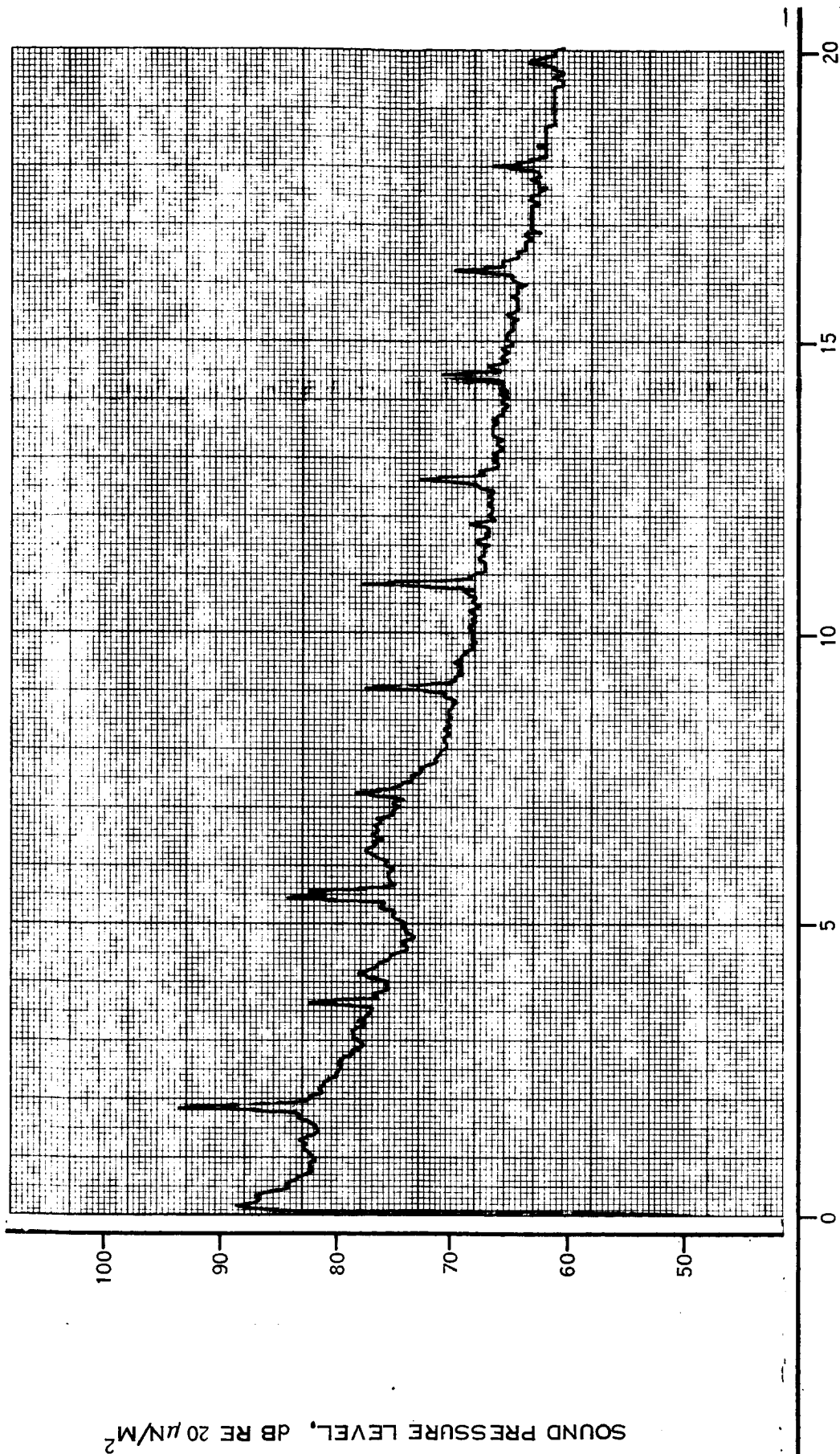


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

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BLADE ANGLE: 47.1 DEGREES

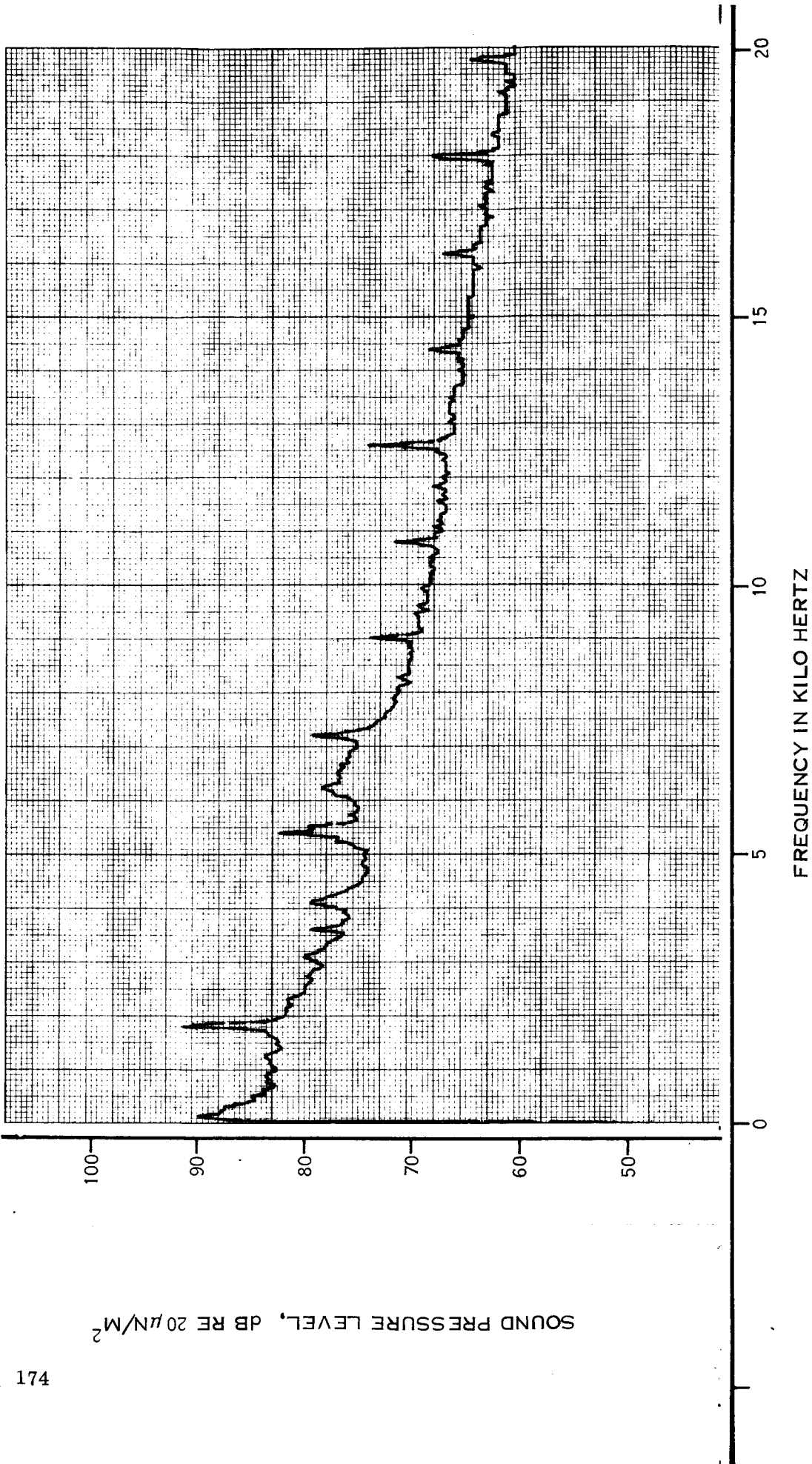
TIP SPEED: 212 M/SEC (697 FT/SEC)

MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 11

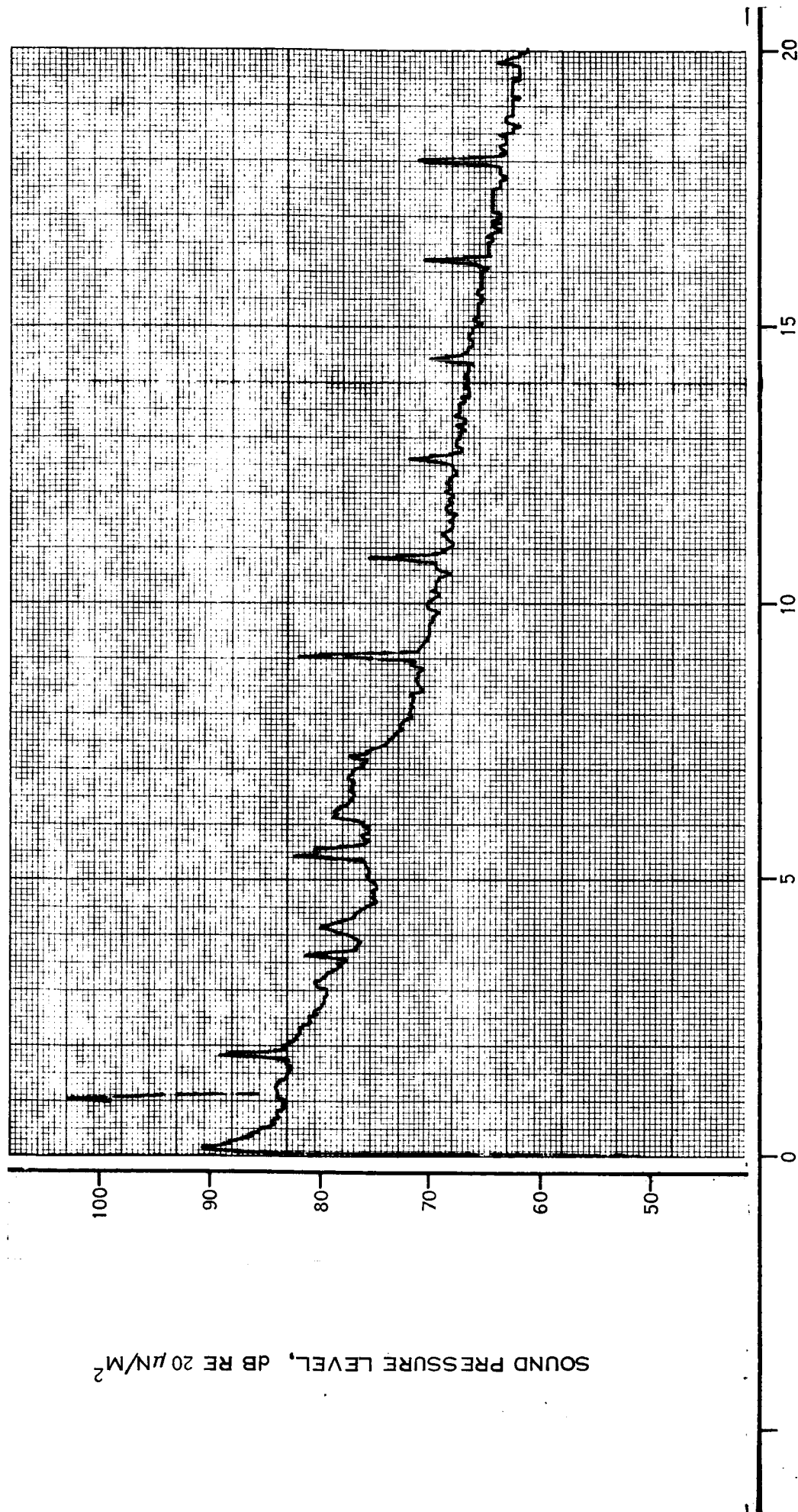


BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

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BLADE ANGLE: 47.1 DEGREES

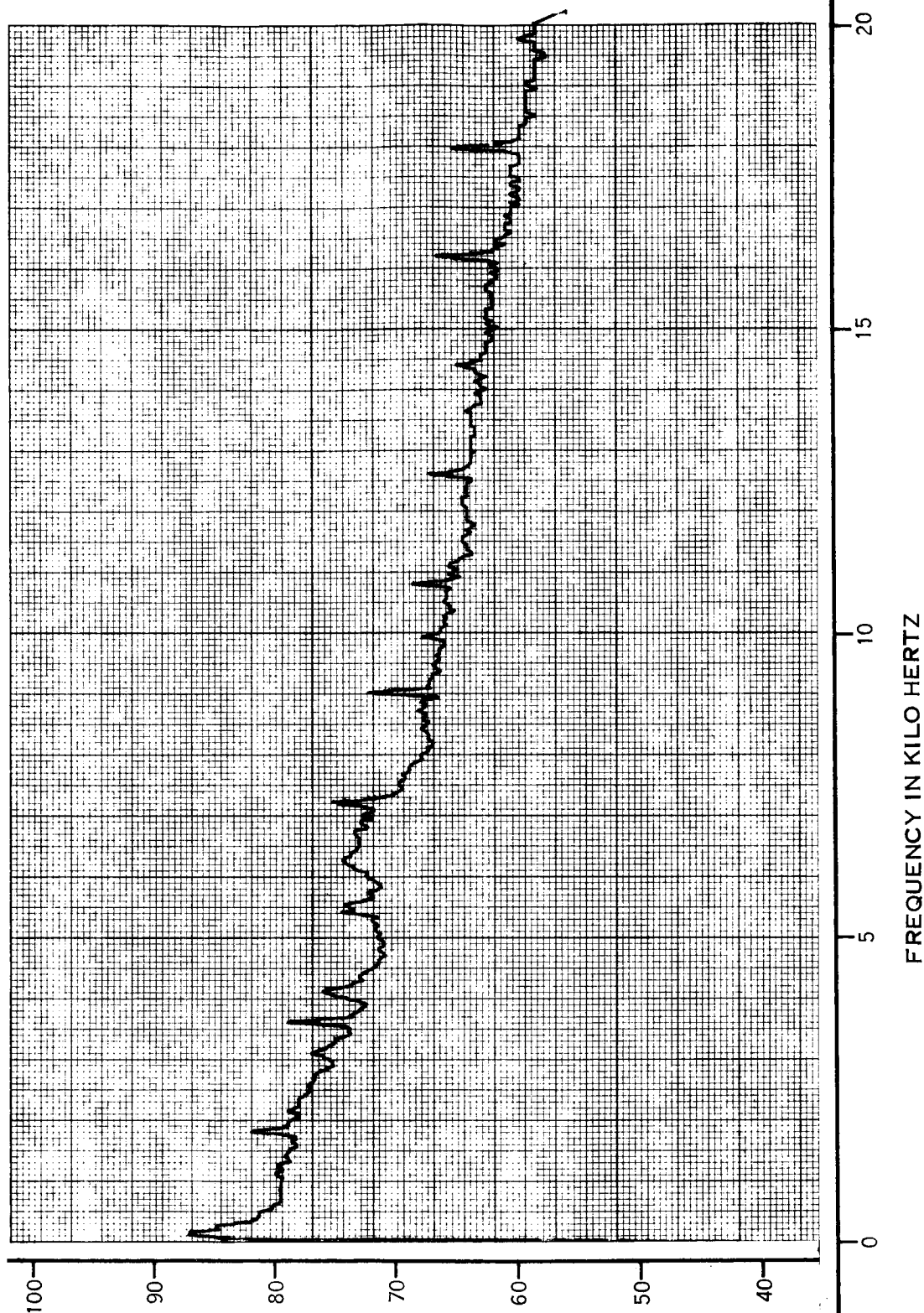
TIP SPEED: 212 M/SEC (697 FT/SEC)

MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 11



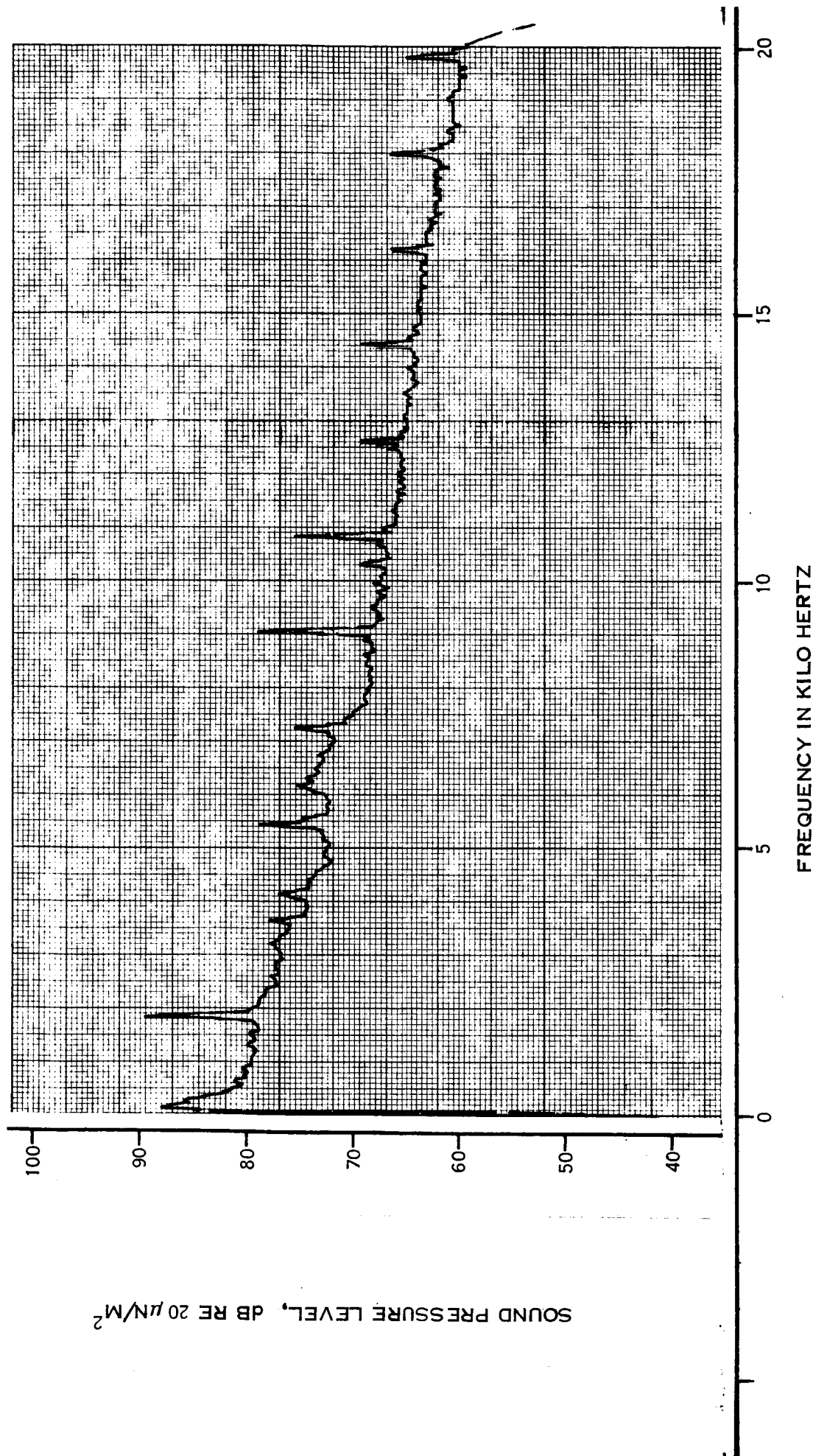
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
MICROPHONE LOCATION: 100 DEGREES AZIMUTH, 7.62 M (25 FT)



NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER

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BLADE ANGLE: 47.1 DEGREES

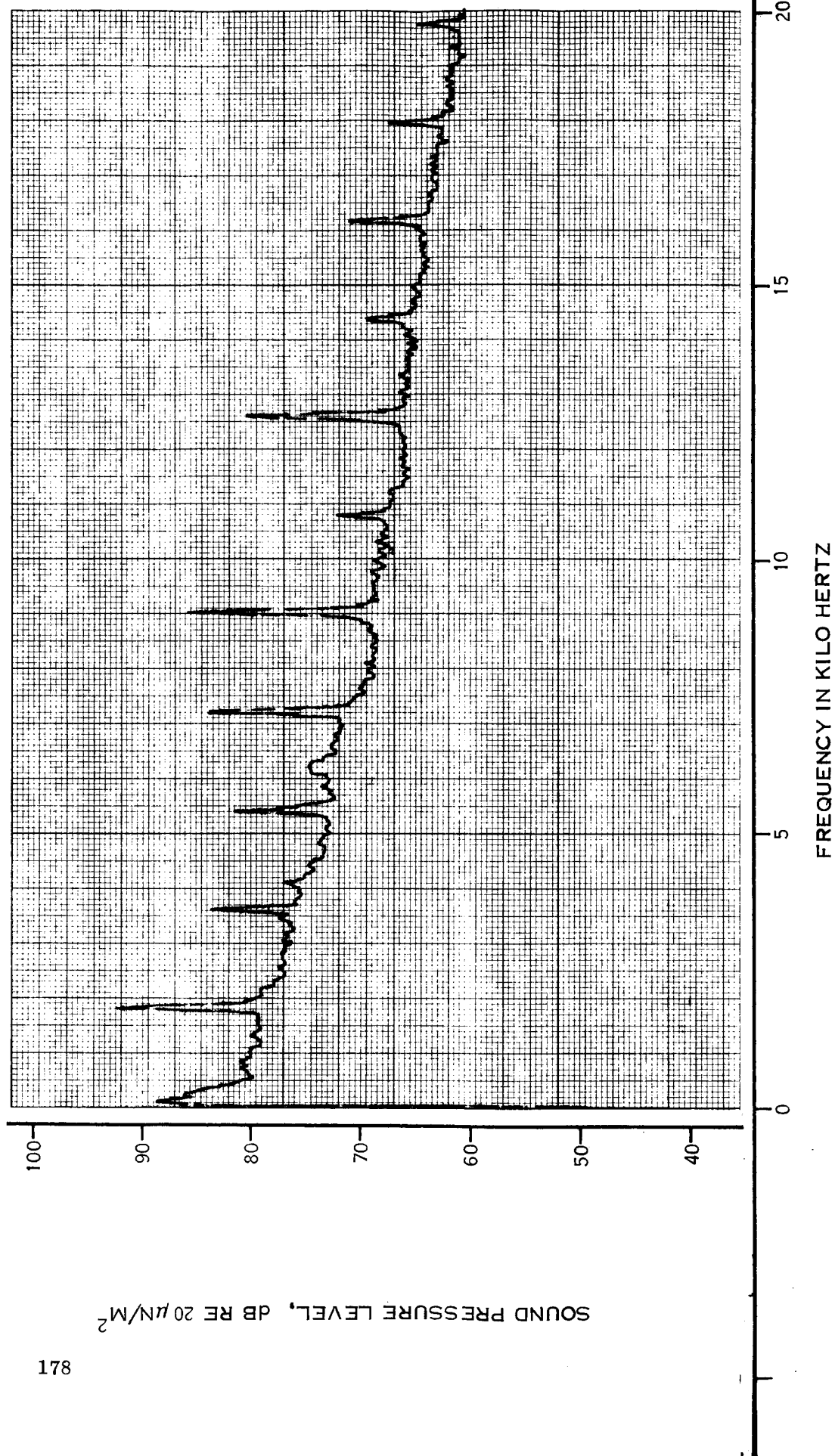
TIP SPEED: 212 M/SEC (697 FT/SEC)

MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 11



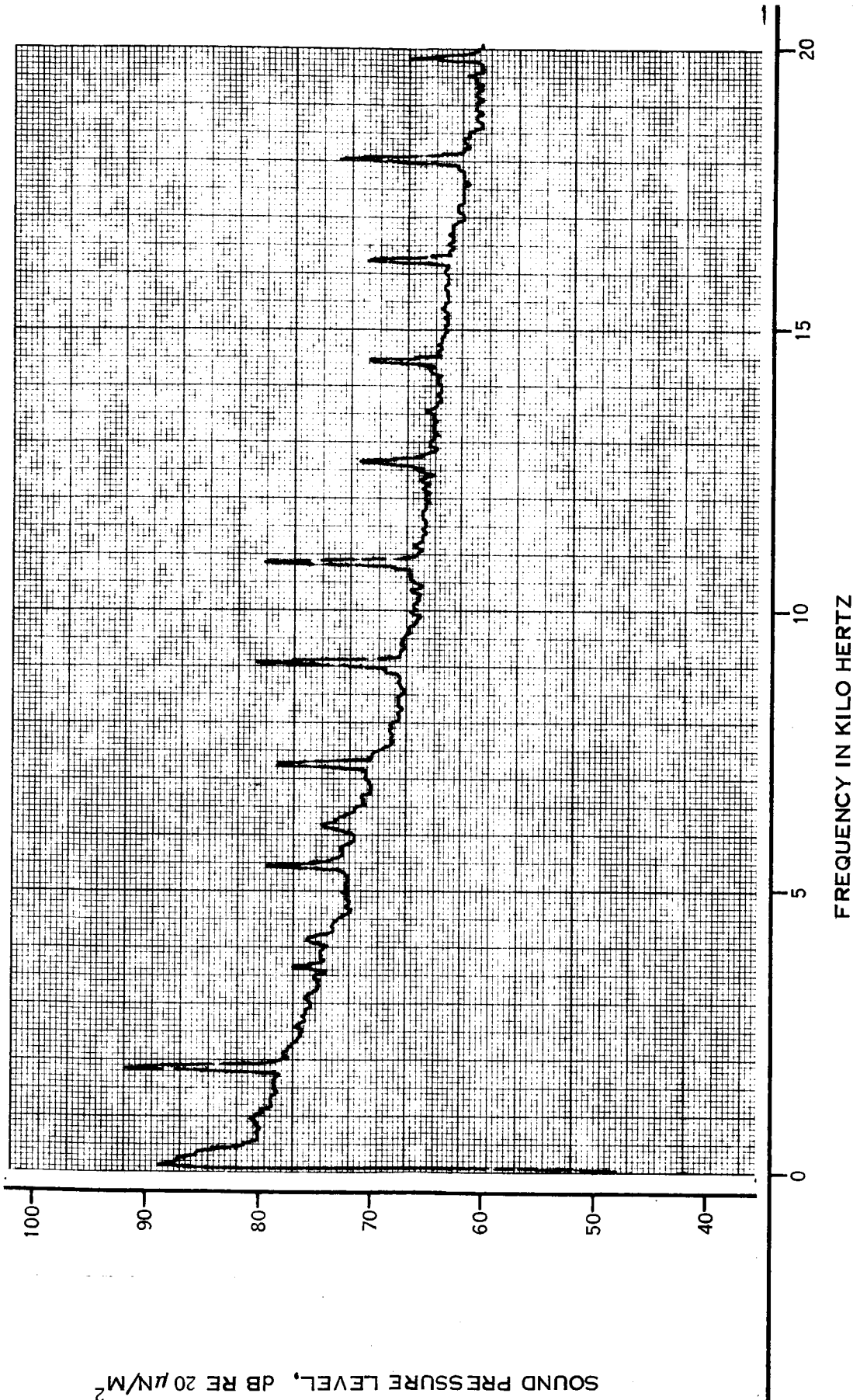
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)



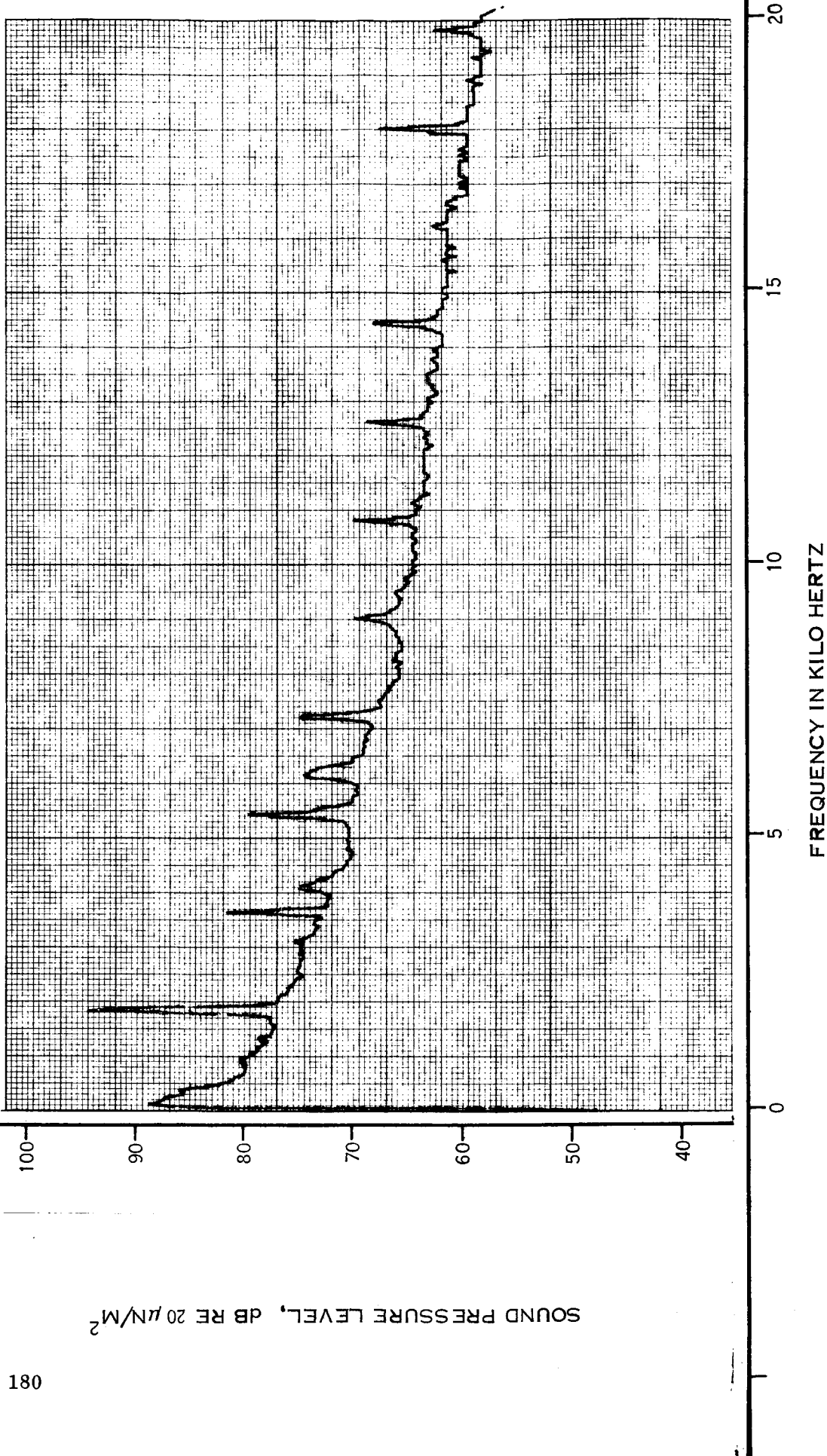
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
179 MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)

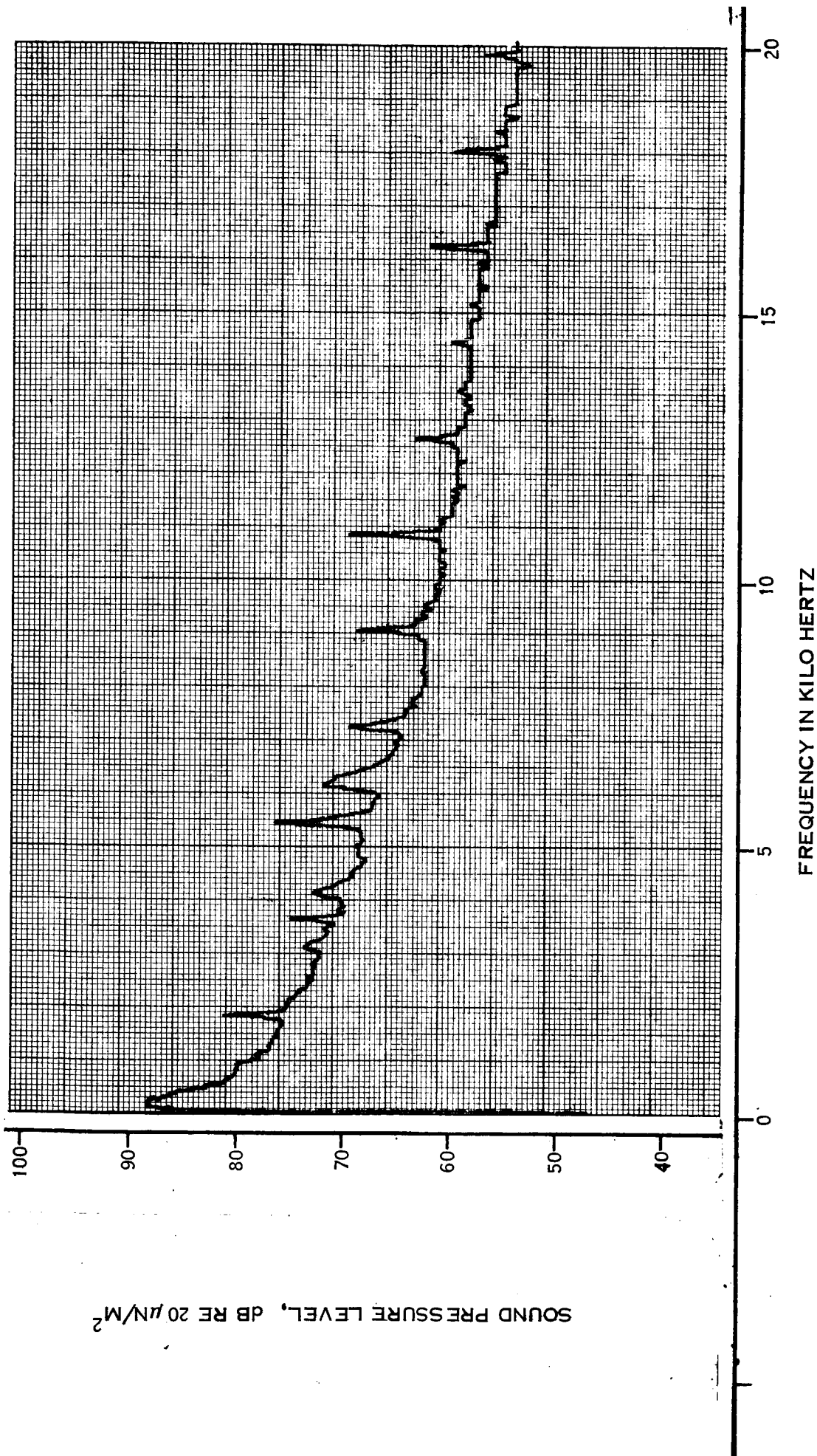


NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.

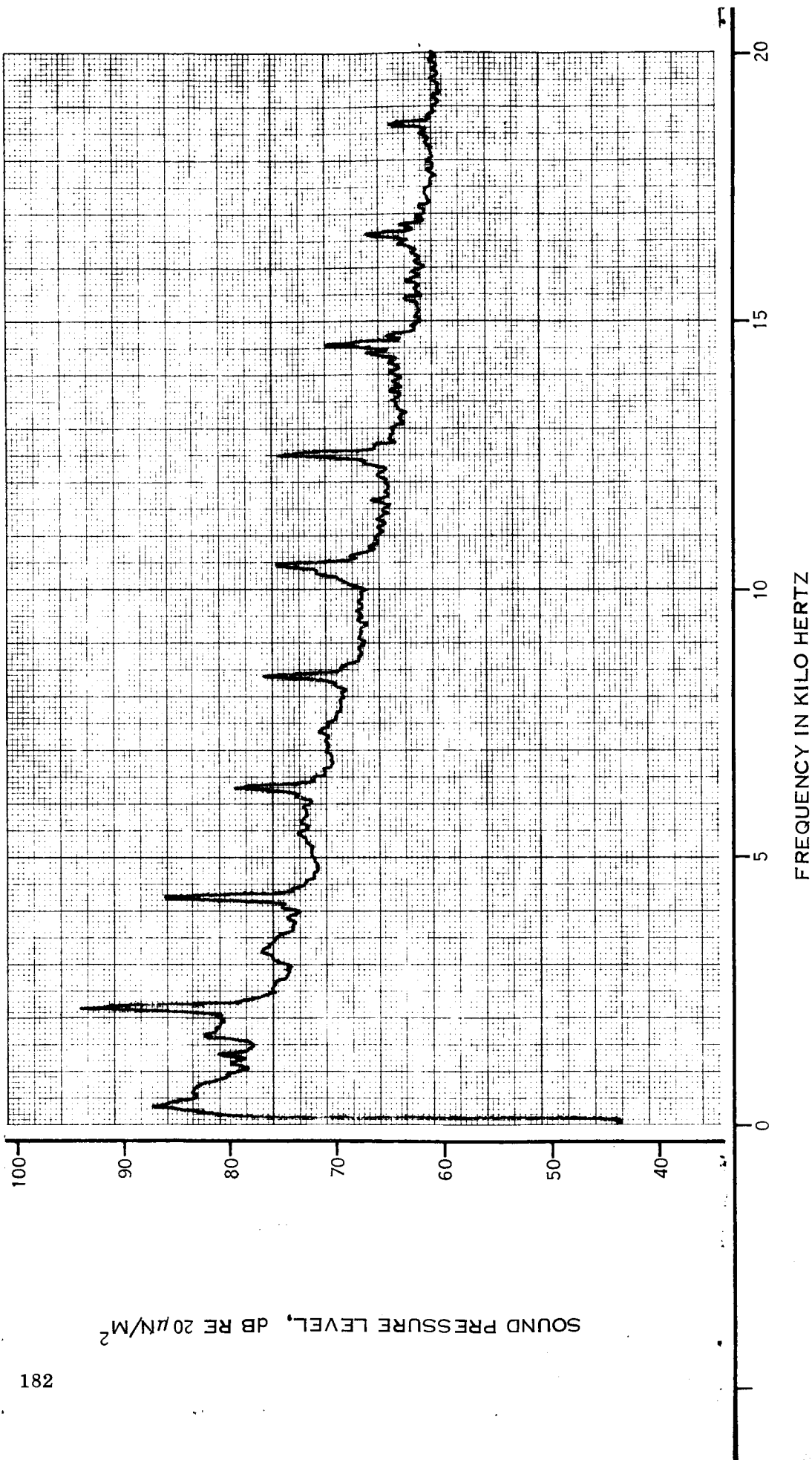
EUGENE DIETZGEN CO.  
MADE IN U. S. A.

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 212 M/SEC (697 FT/SEC)  
MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)

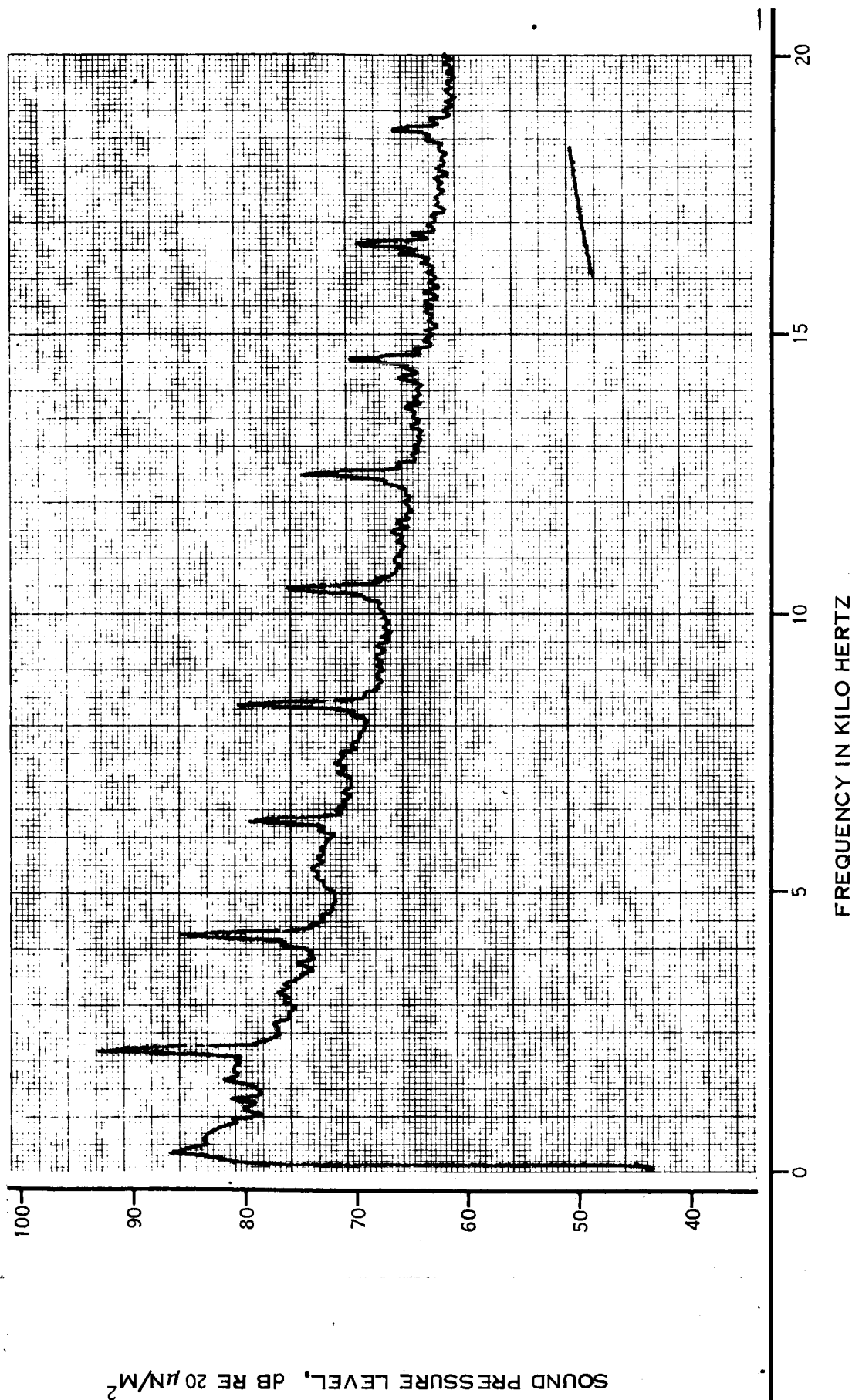
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 11



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

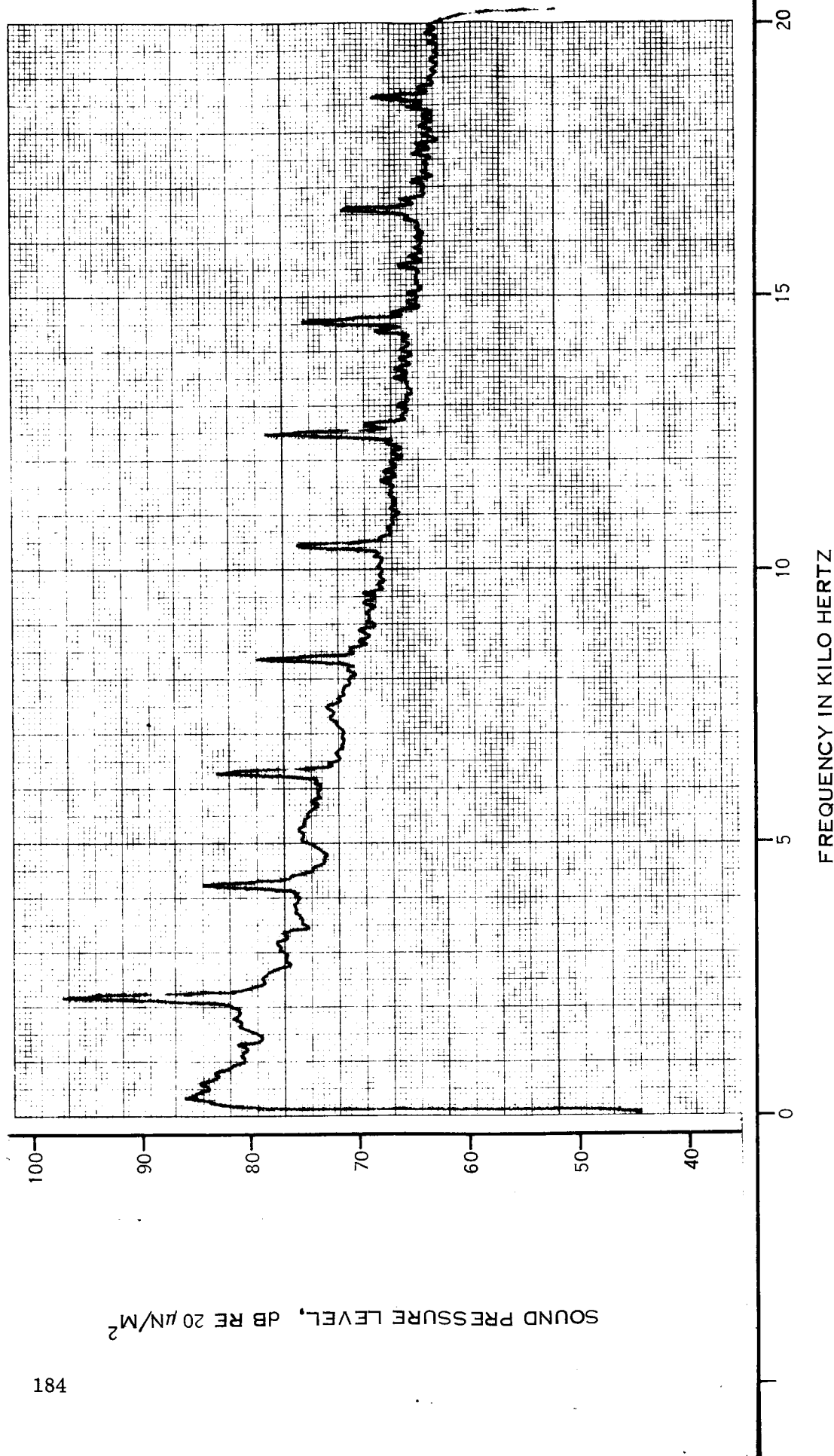
BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 0 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER  
EUGENE DIETZGEN CO.  
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BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

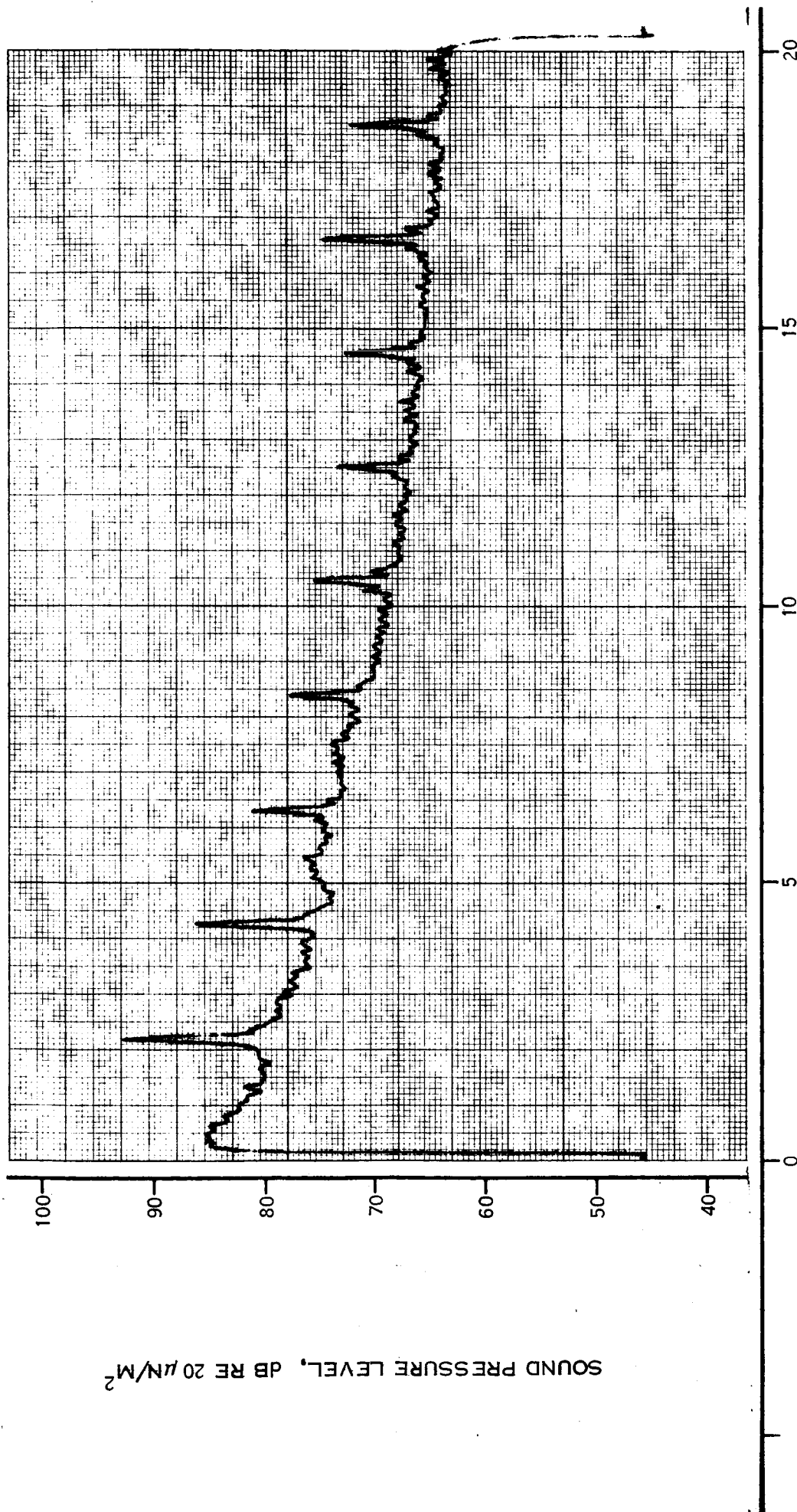
BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)



1

ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

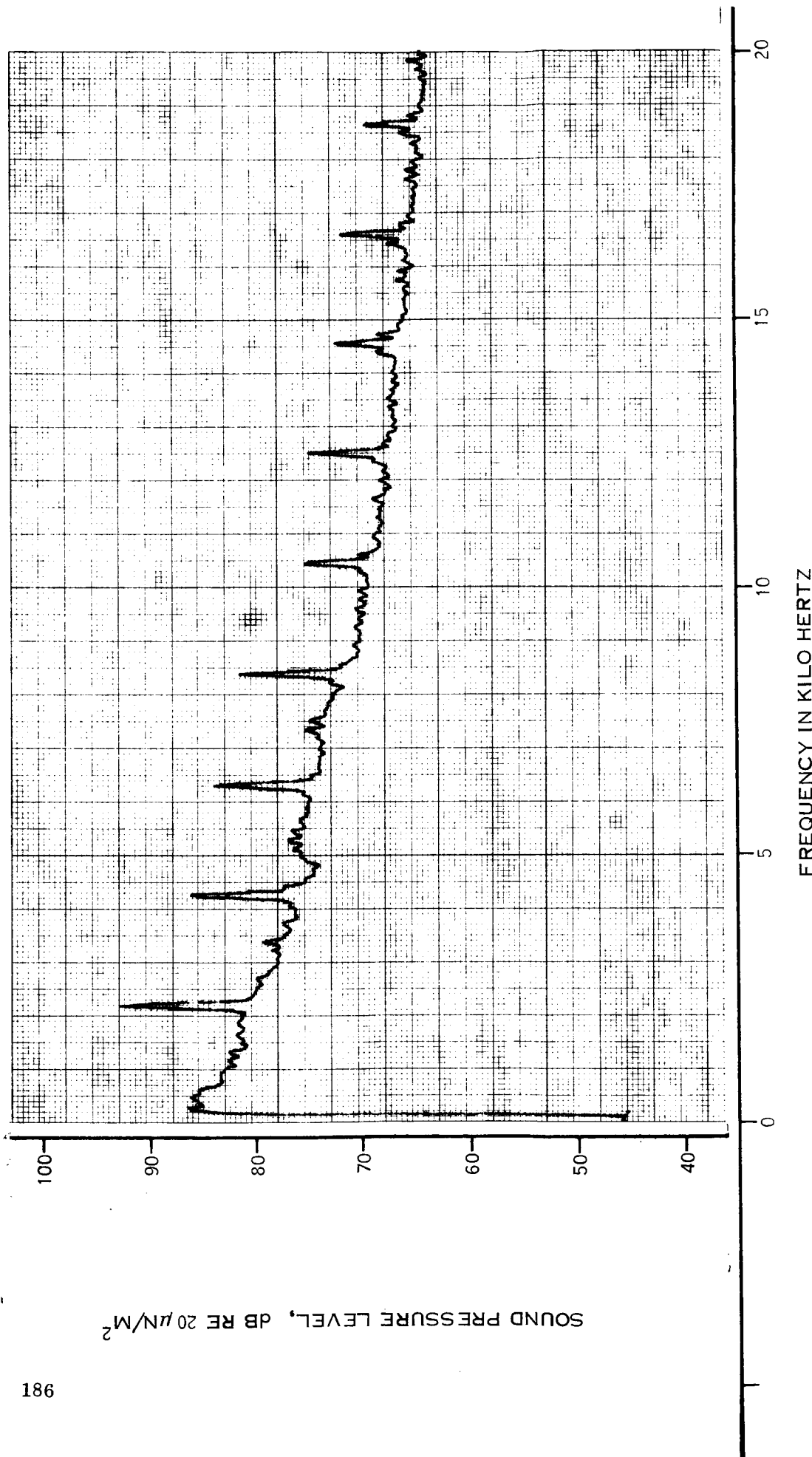
EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER  
EUGENE DIETZGEN CO.  
MADE IN U. S. A.



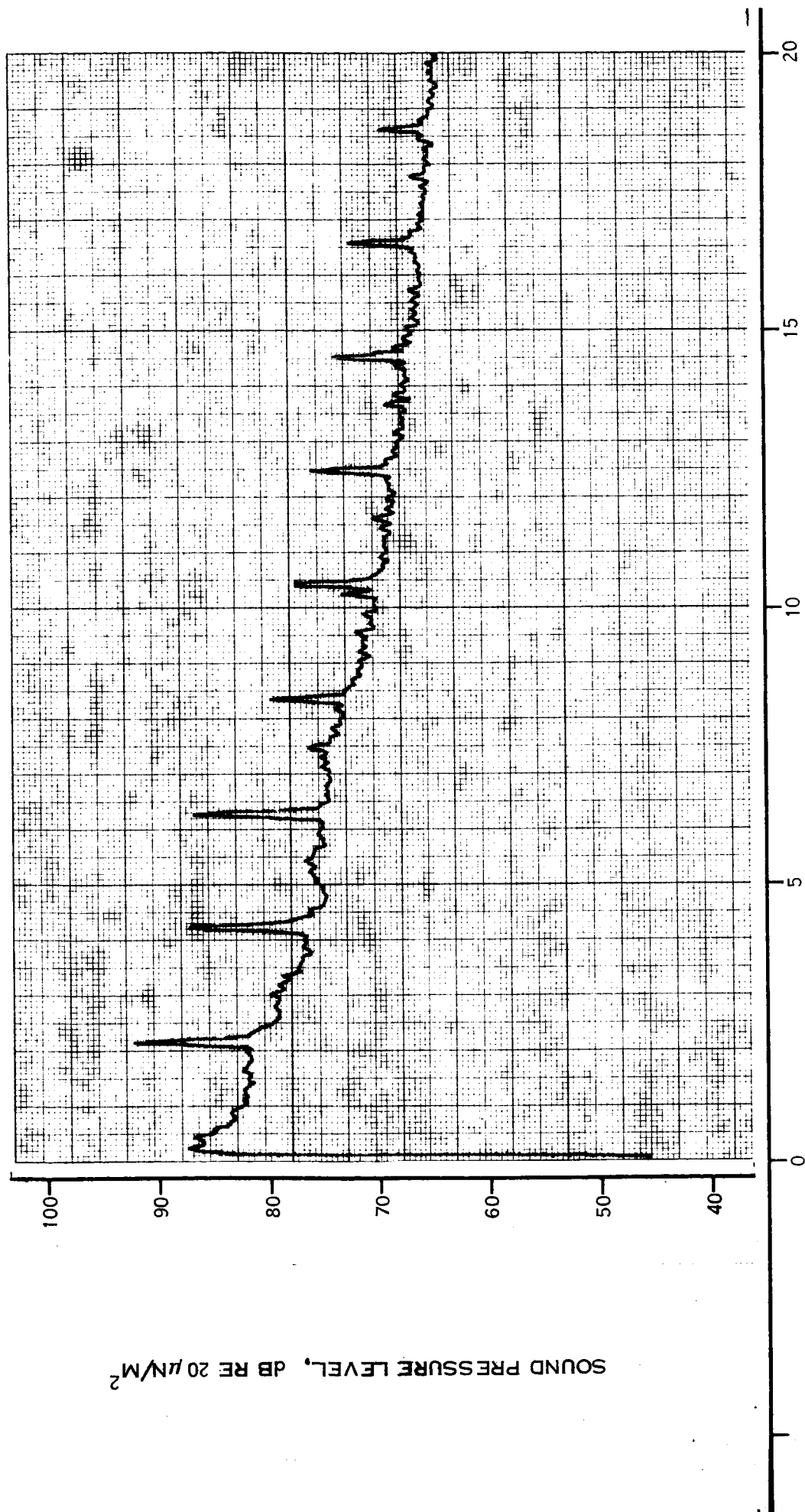
BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC 811 FT/SEC  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18



EUGENE DIETZGEN CO.  
MADE IN U. S. A.

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

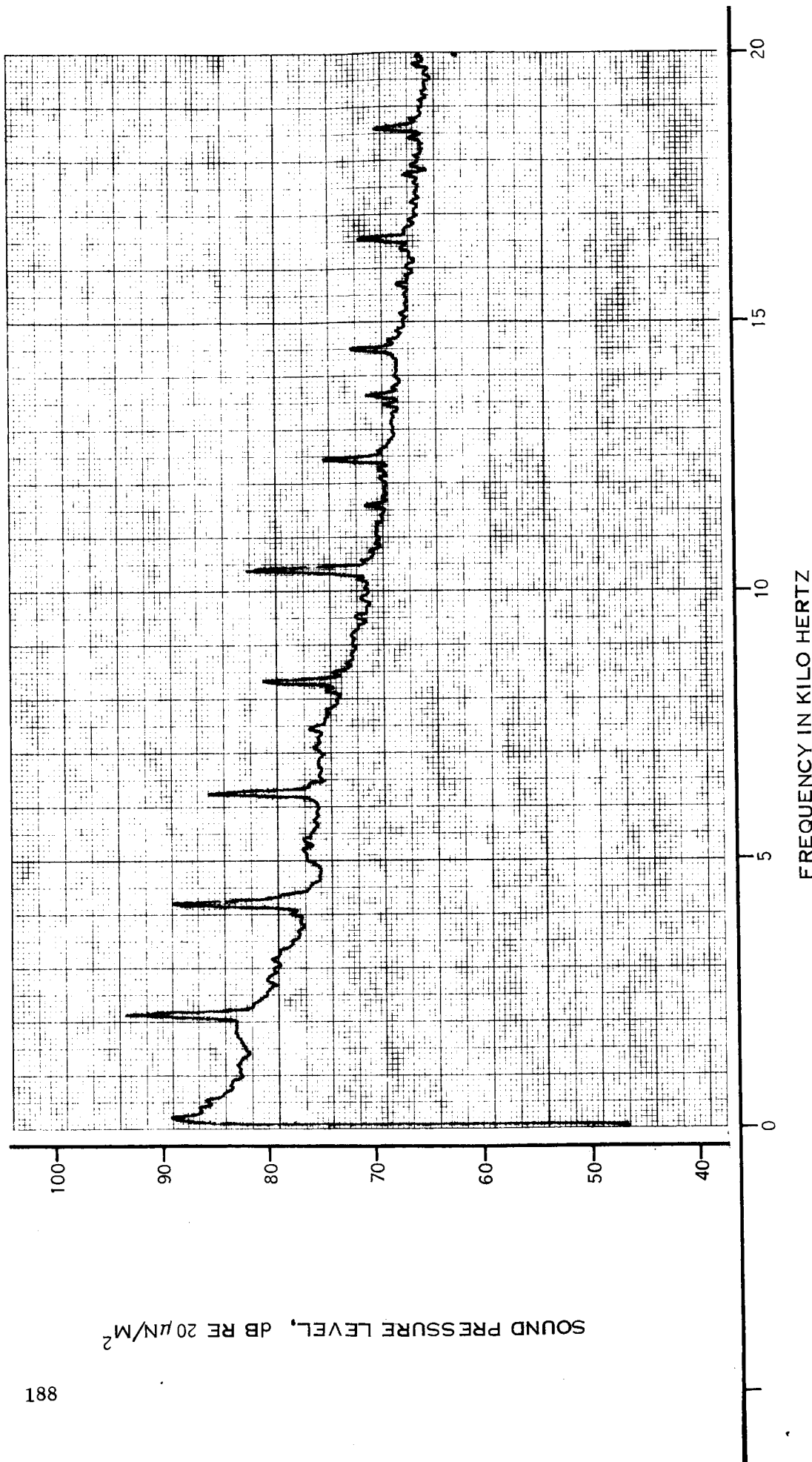


FREQUENCY IN KILO HERTZ

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC. 811 FT/SEC  
MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)

SOUND PRESSURE LEVEL, DB RE 20  $\mu$ N/M<sup>2</sup>

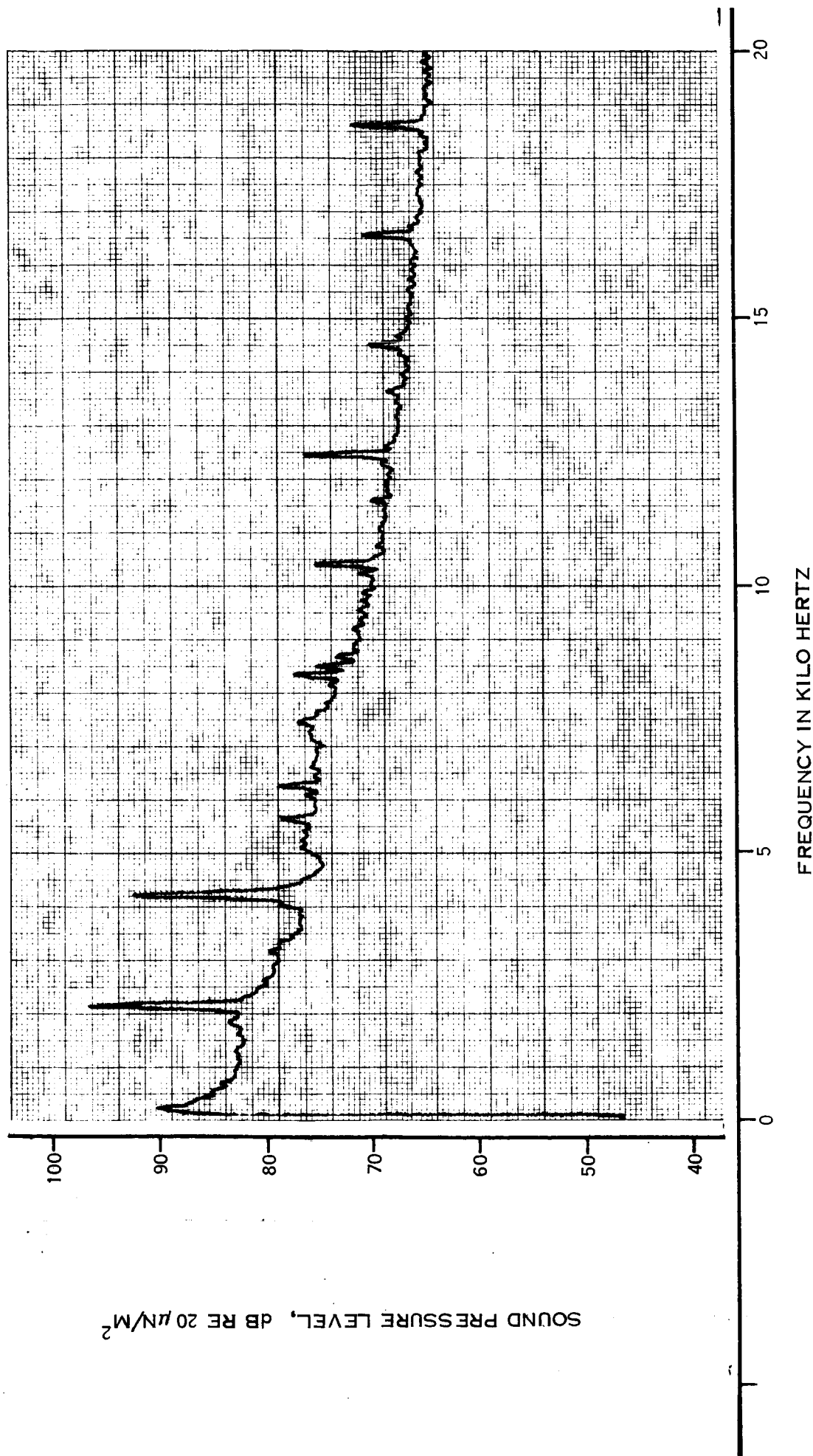


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

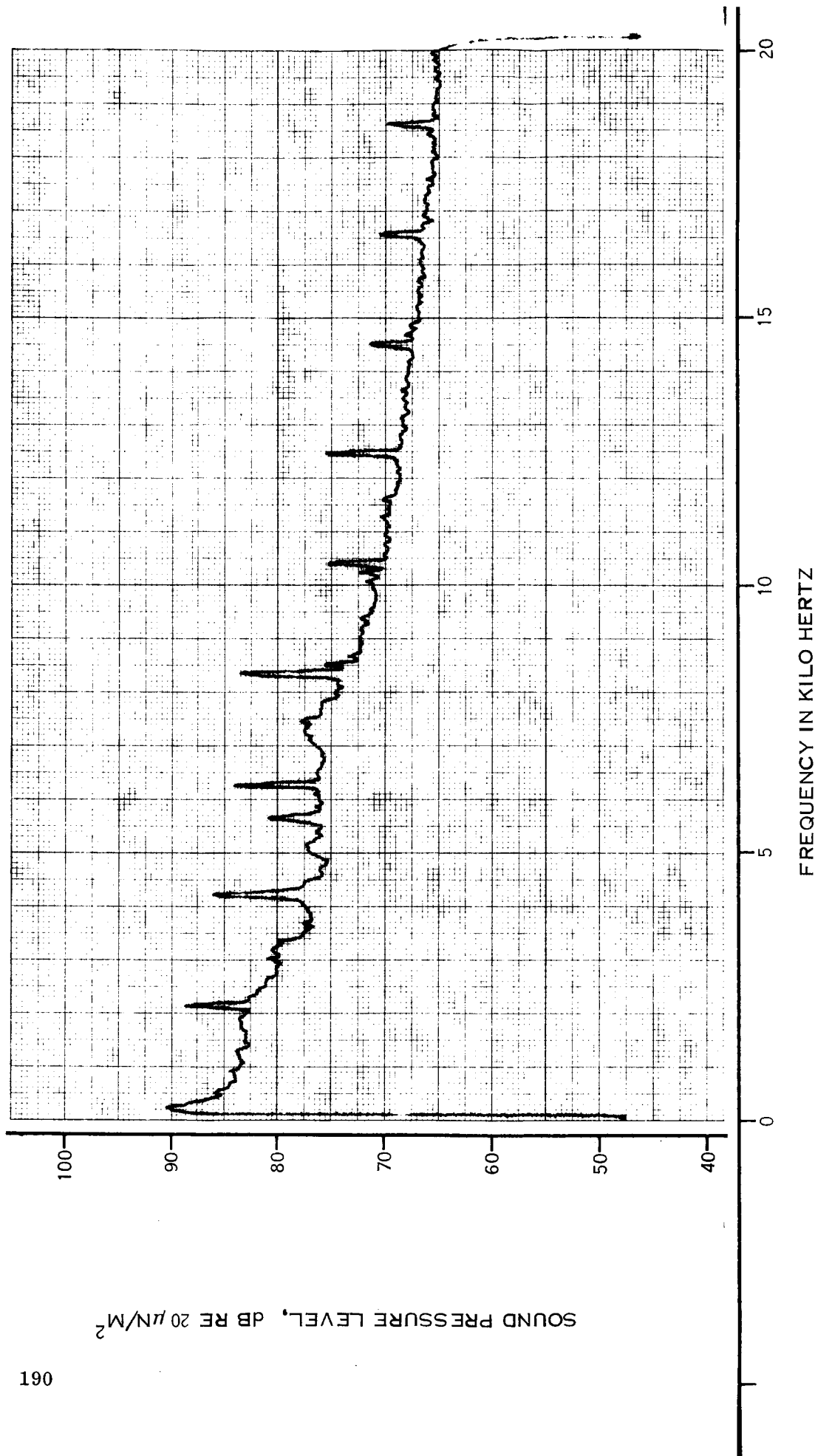
EUGENE DIETZGEN CO.  
MADE IN U. S. A.

ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



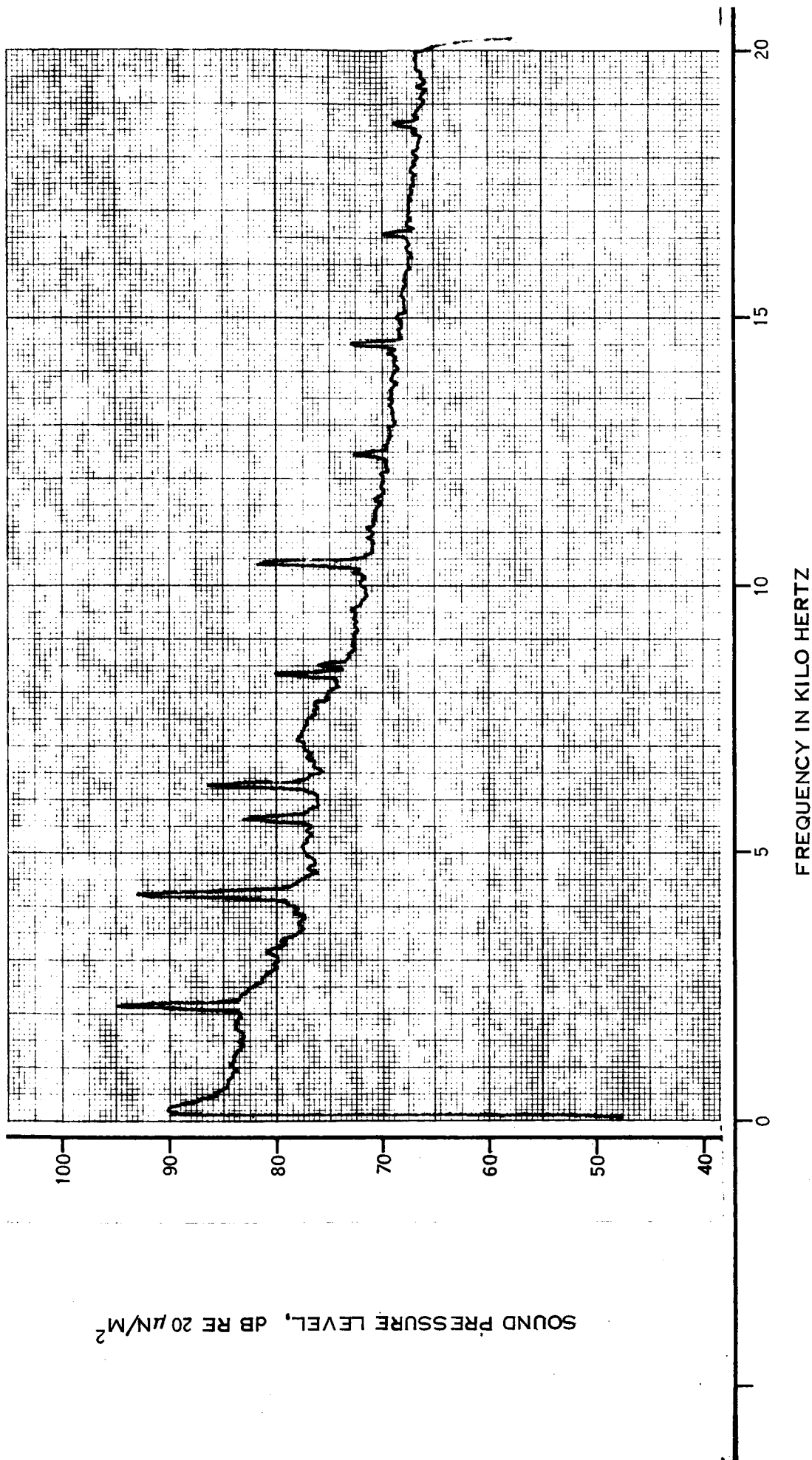
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

EUGENE DIETZGEN CO.  
MADE IN U. S. A.NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

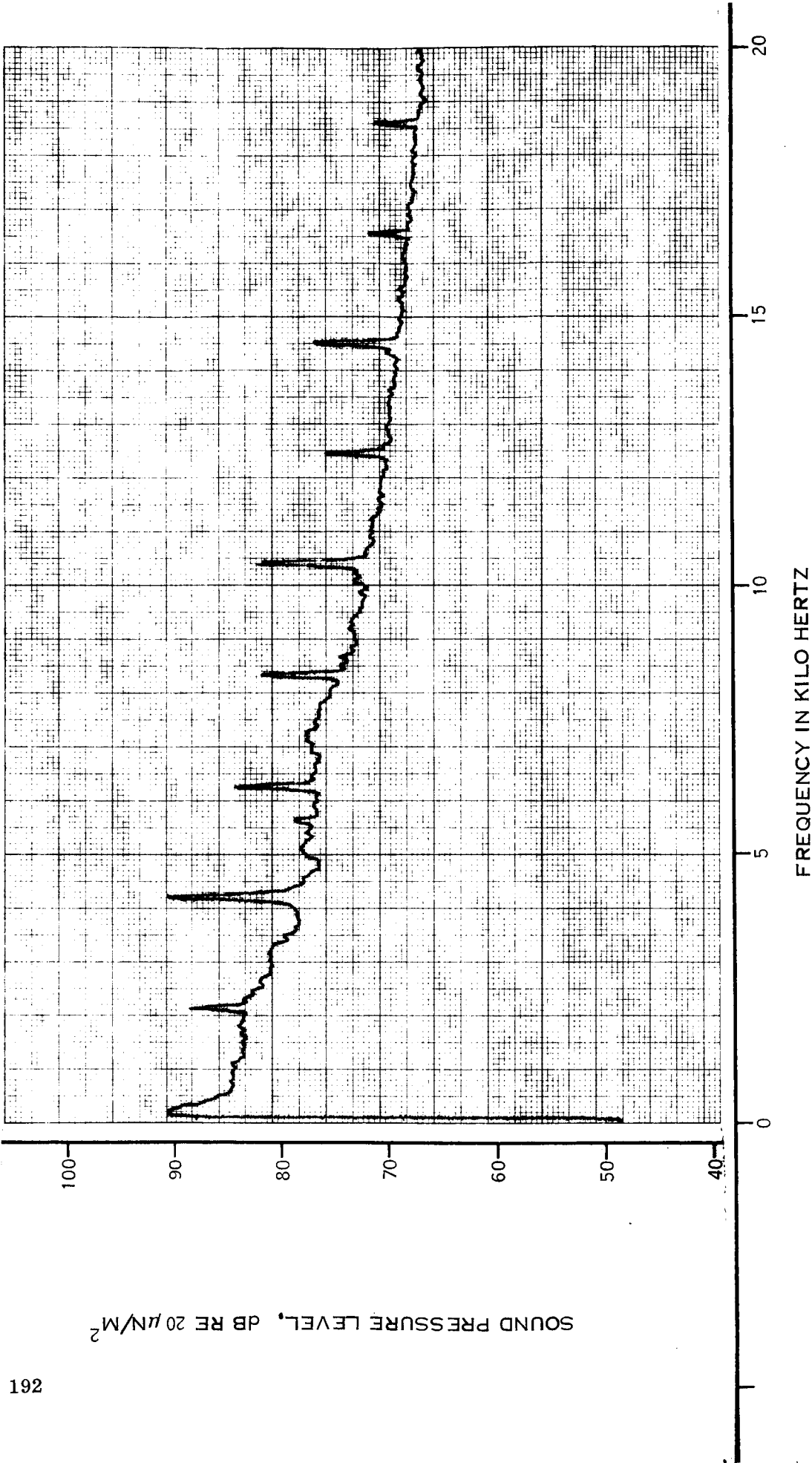
NO 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18



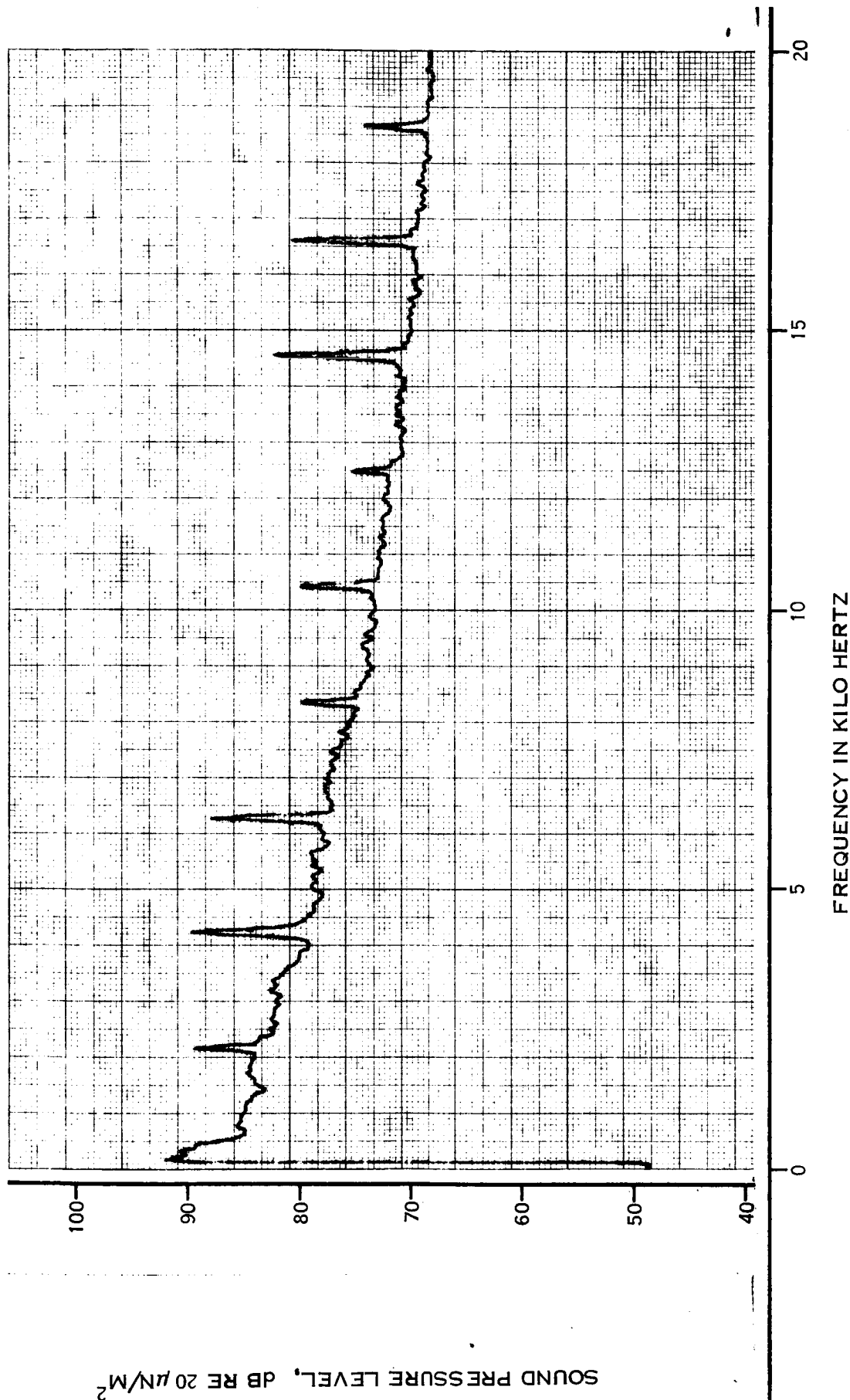
SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N}/\text{M}^2$

FREQUENCY IN KILO HERTZ

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER:18

BLADE ANGLE:47.1 DEGREES  
TIP SPEED:247 M/SEC(811 FT/SEC)  
MICROPHONE LOCATION:100 DEGREES AZIMUTH, 7.62 M (25 FT)

NC 343-A DIETZEN GRAPH PAPER  
MILLIMETER  
EUGENE DIETZEN CO.  
NEW JERSEY

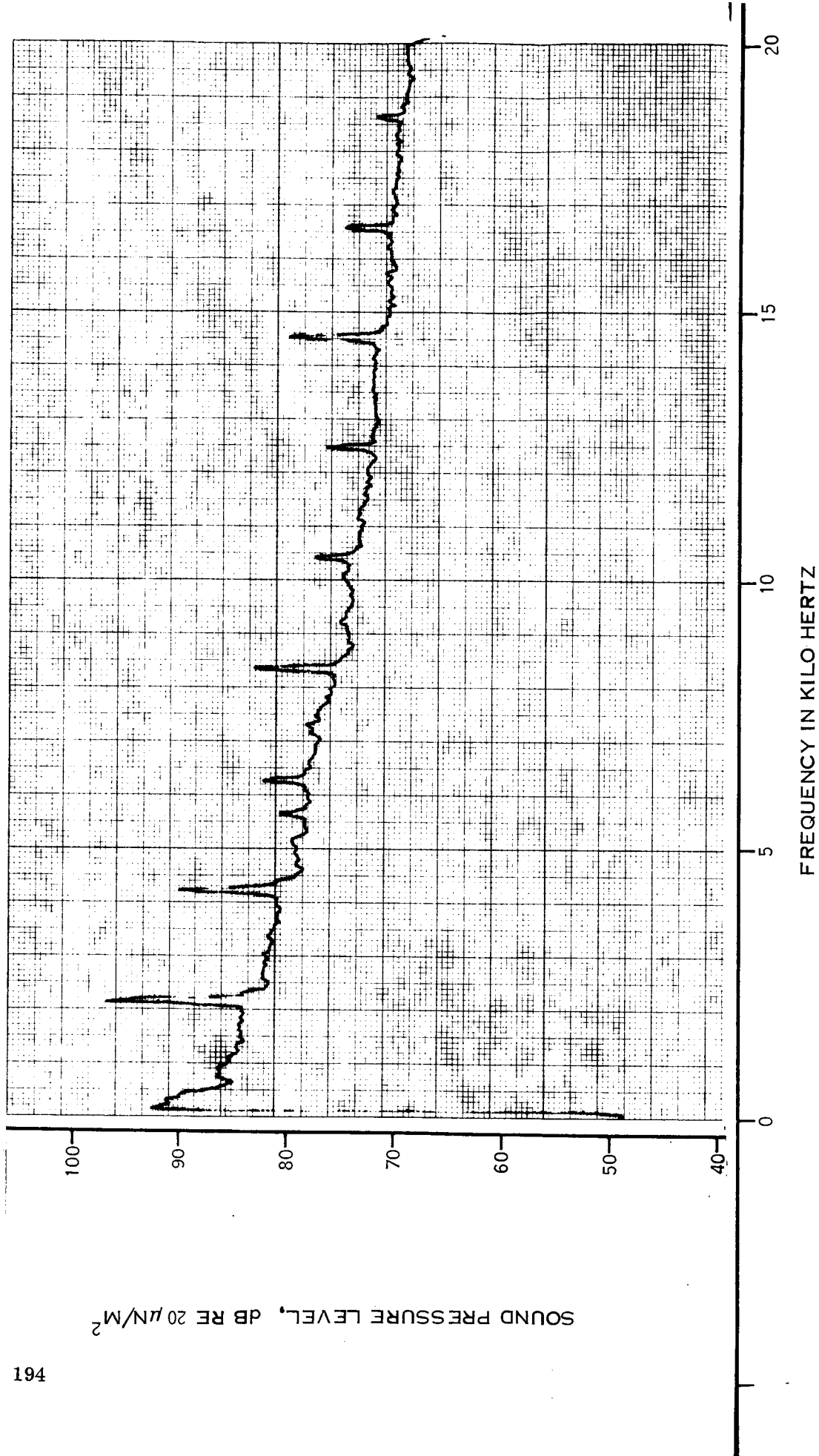


BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

EUGENE DIETZGEN CO  
MADE IN U. S. A.

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



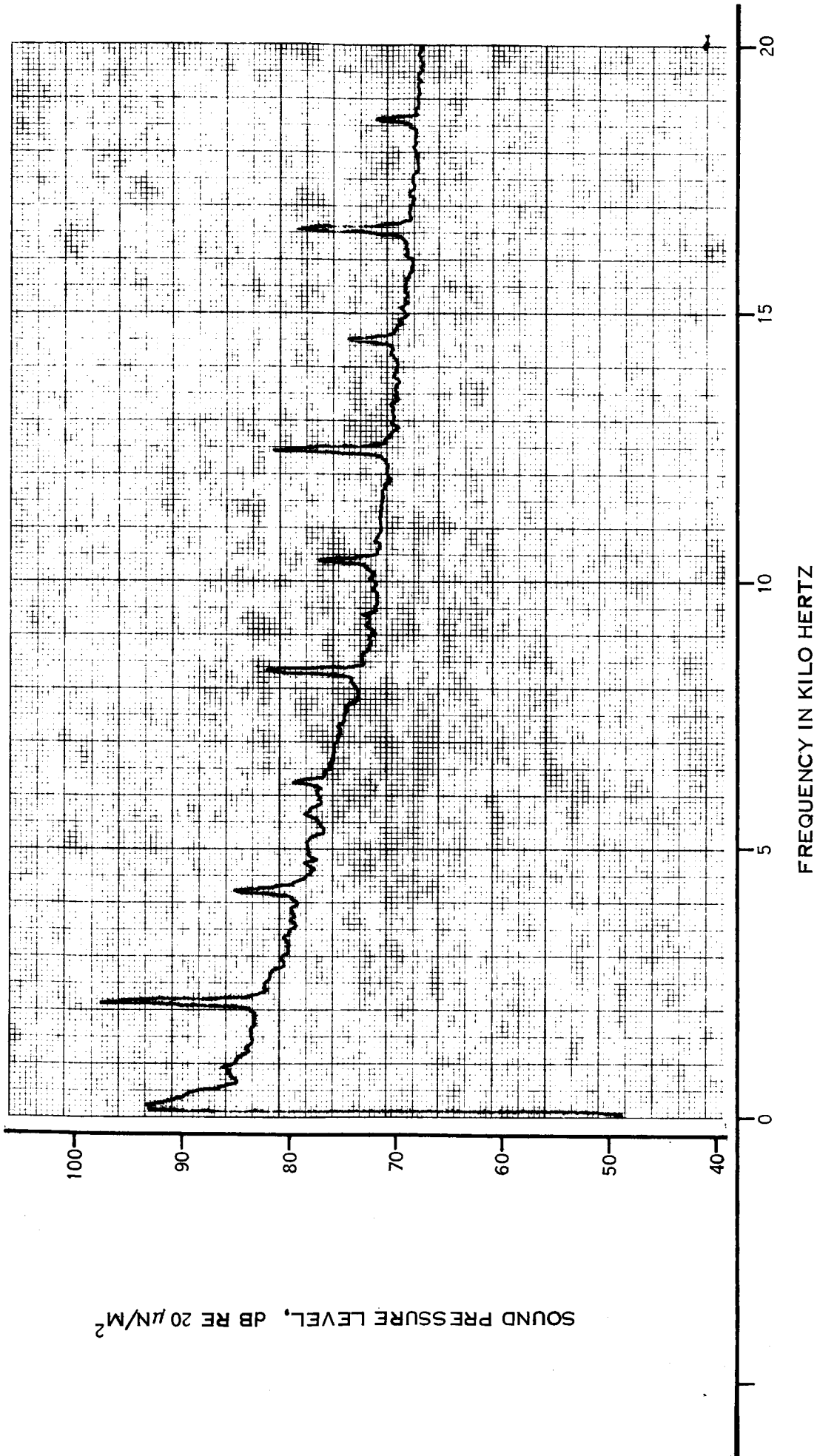
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)



NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.

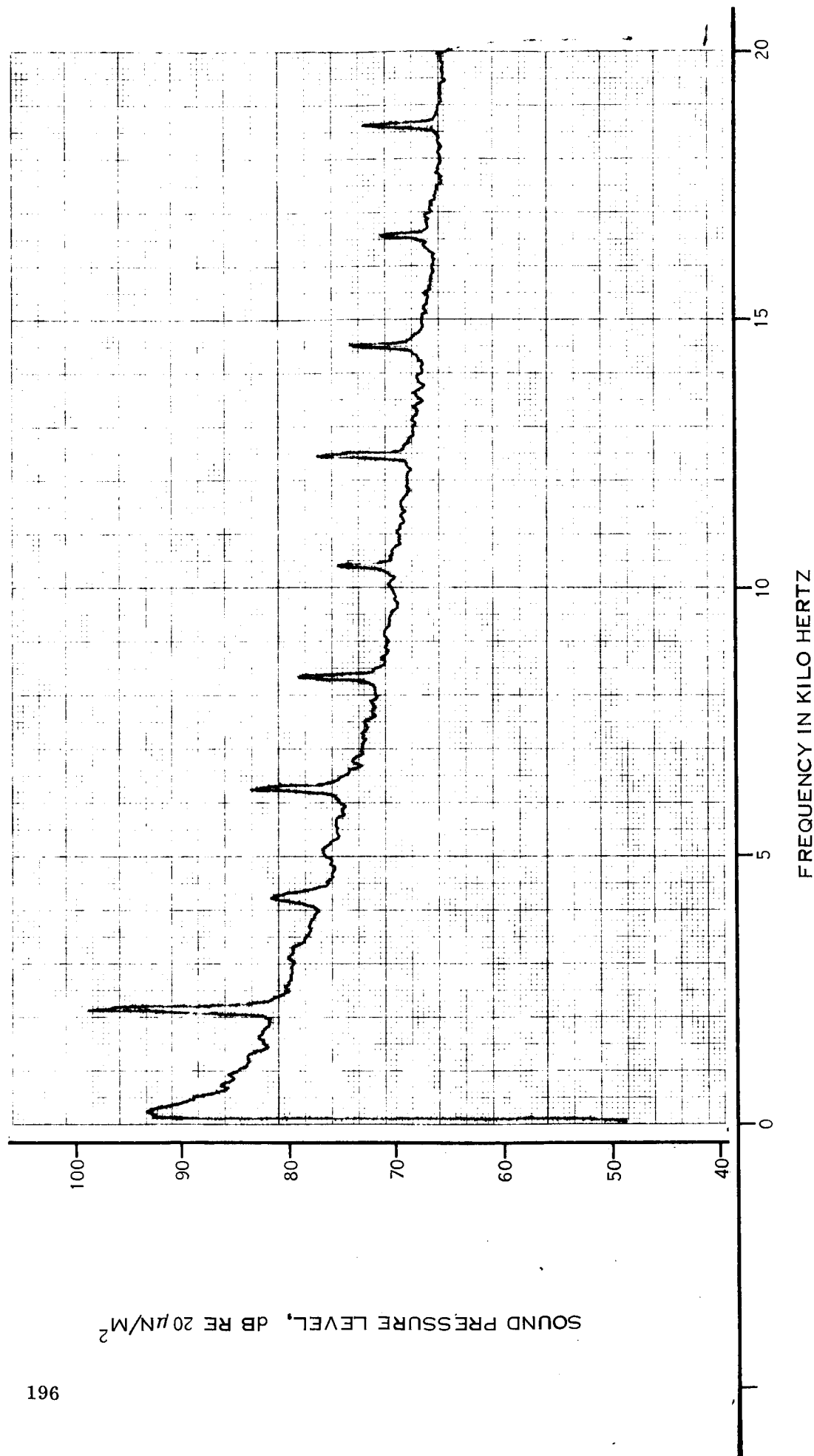


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 18

BLADE ANGLE: 47.1 DEGREES  
TIP SPEED: 247 M/SEC (811 FT/SEC)  
MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)

JAN 20 1964

N. J. M. C. ZIGEN GRAPH

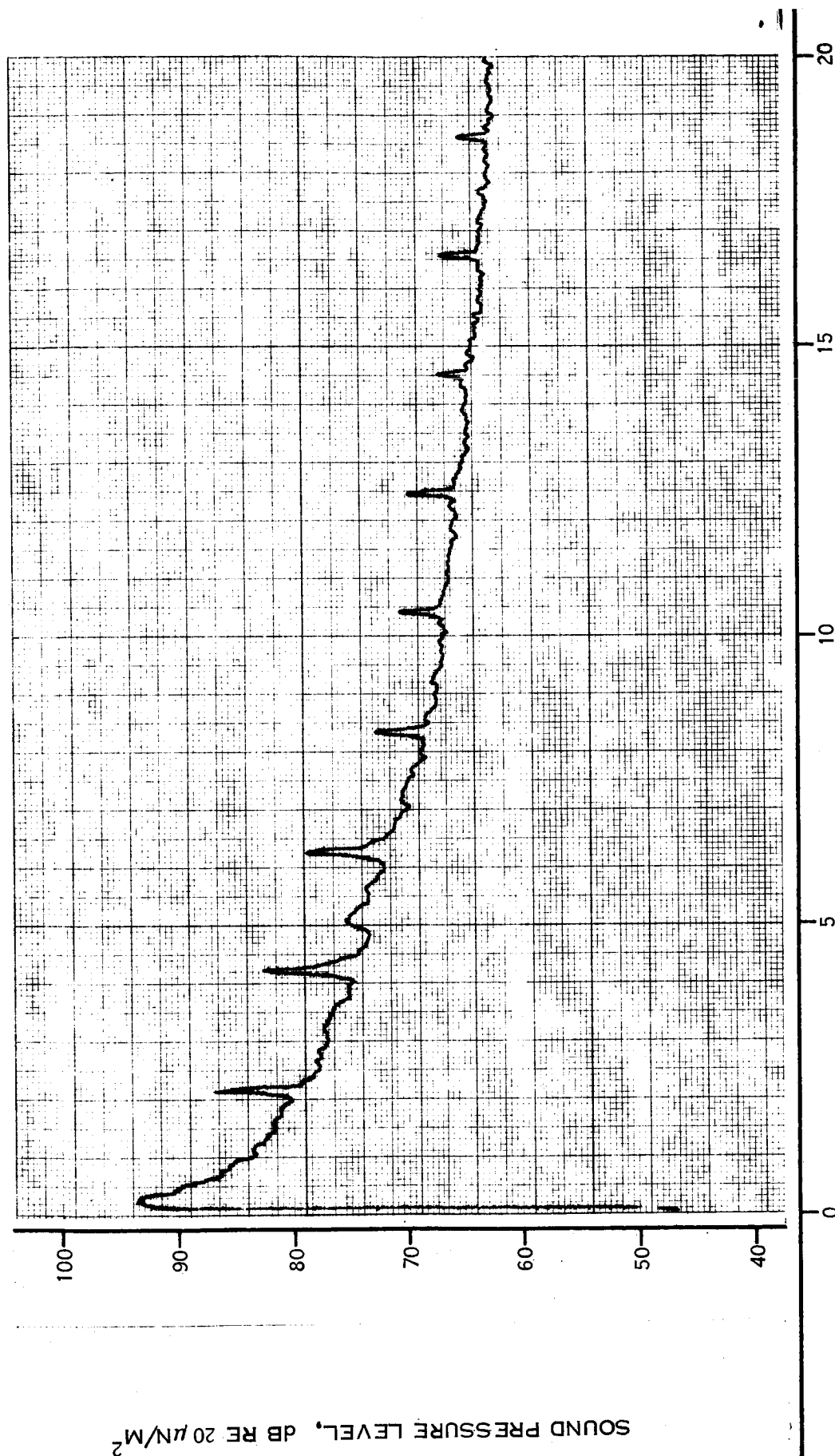


BLADE ANGLE: 47.1 DEGREES  
 TIP SPEED: 247 M/SEC (811 FT/SEC)  
 MICROPHONE LOCATION: 140 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
 512 ENSEMBLES  
 TEST CONDITION NUMBER: 18

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
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BLADE ANGLE: 47.1 DEGREES

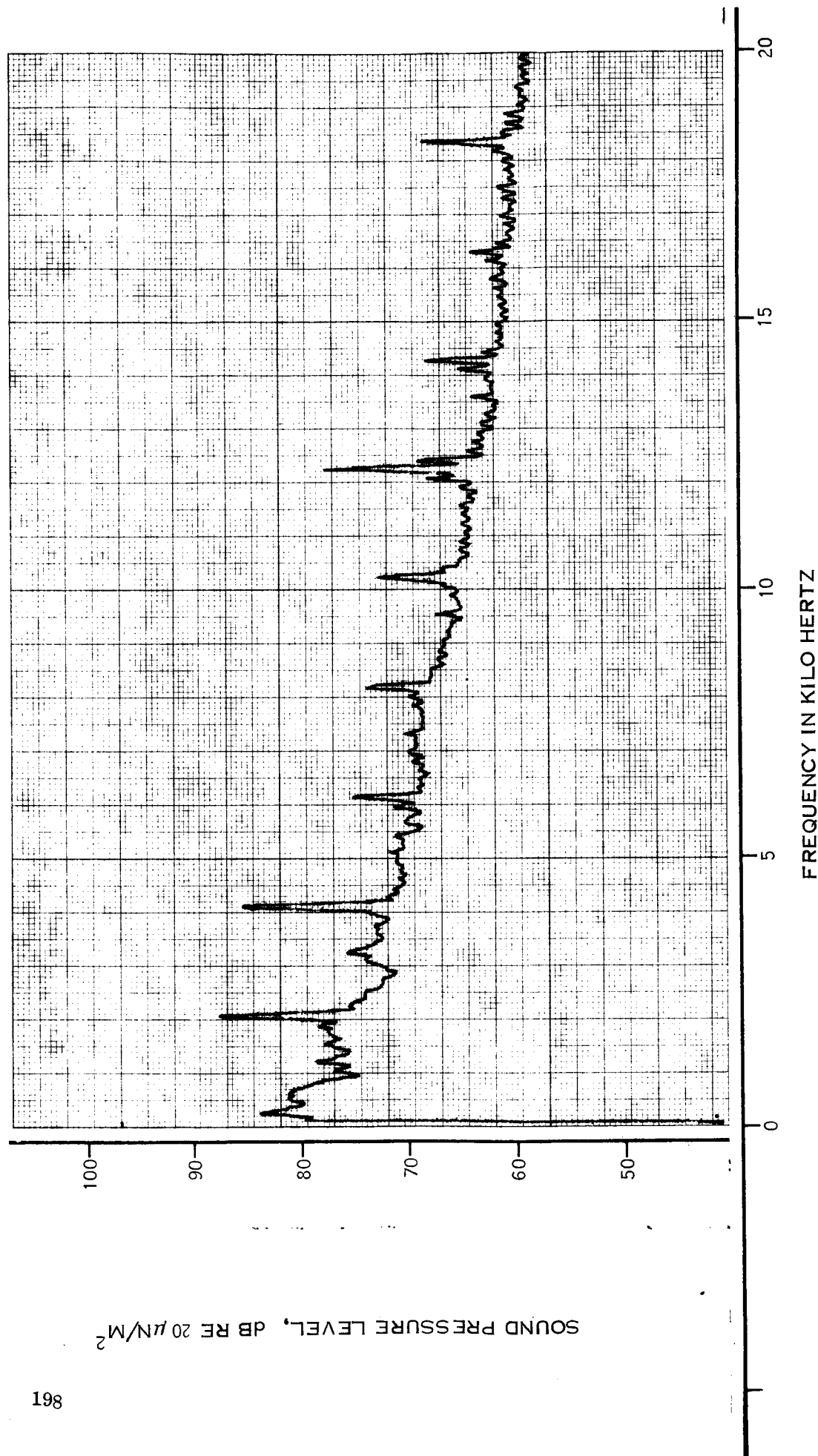
TIP SPEED: 247 M/SEC (811 FT/SEC)

MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 18

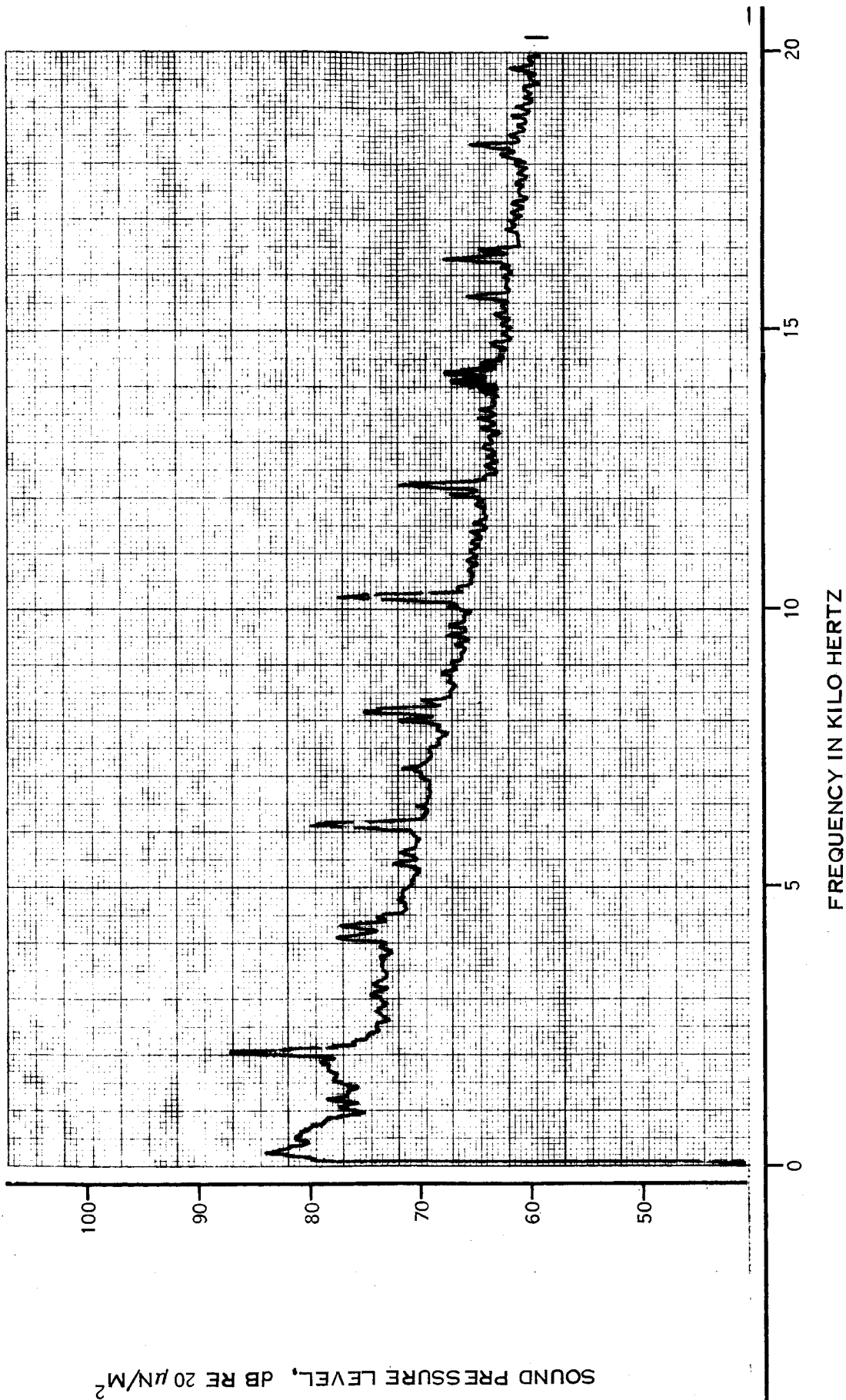


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 0 DEGREES AZIMUTH, 7.62 M (25 FT)

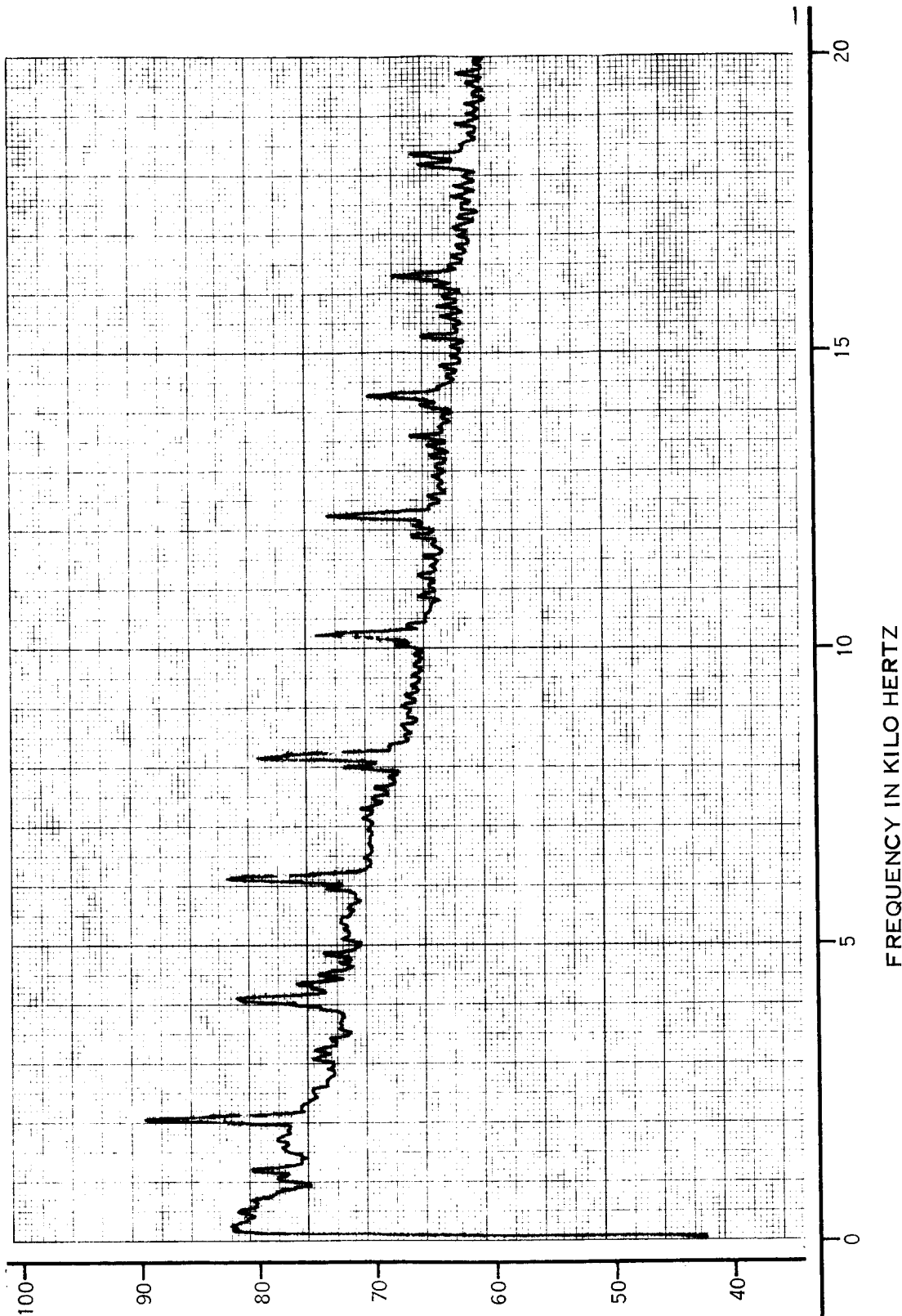
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)

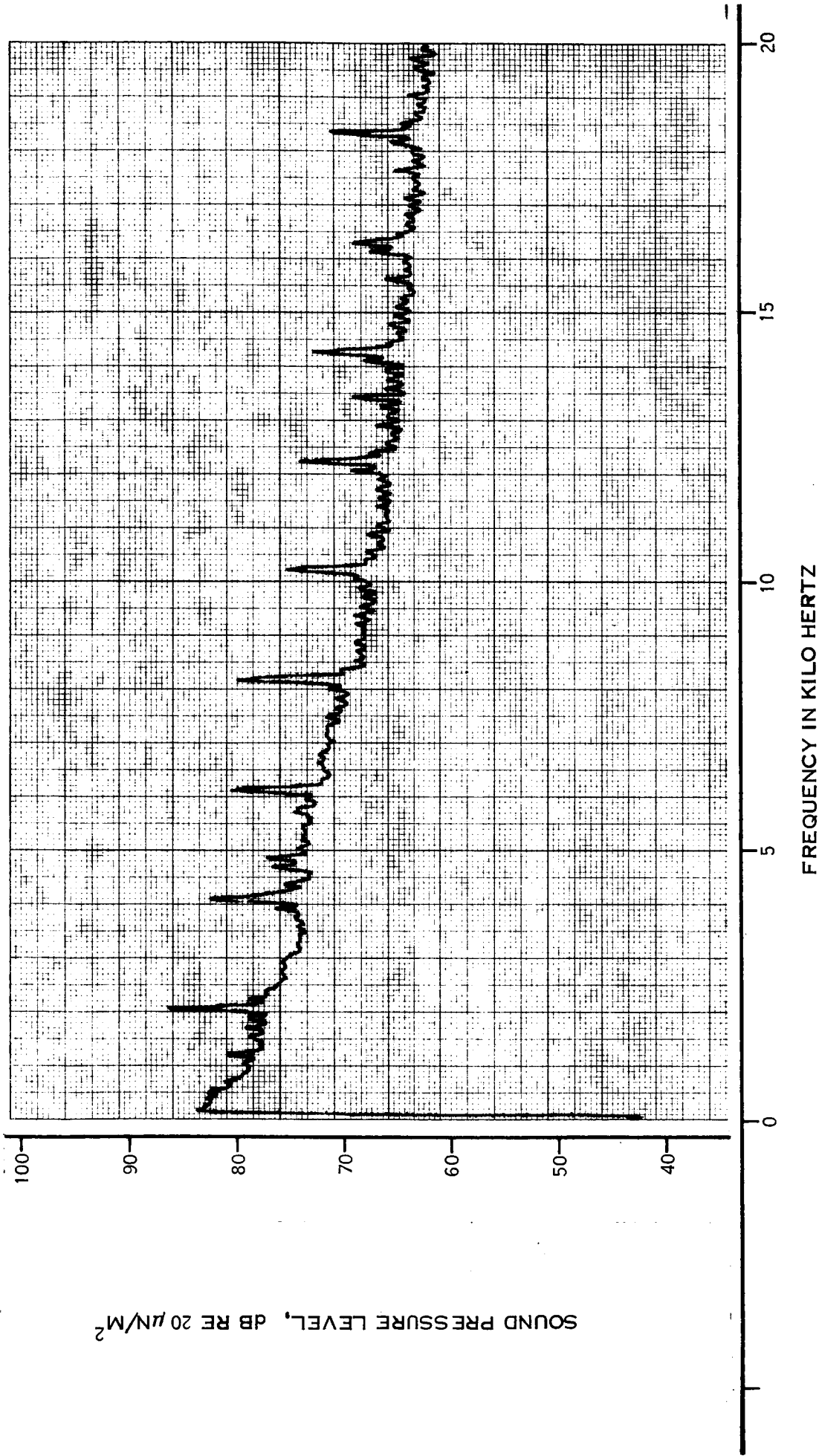
SOUND PRESSURE LEVEL, DB RE 20  $\mu\text{N/M}^2$ 

FREQUENCY IN KILO HERTZ

60 HERTZ BAND WIDTH  
 512 ENSEMBLES  
 TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
 TIP SPEED: 244 M/SEC (801 FT/SEC)  
 MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)

ND 340-M DIETZGEN GRAPH PAPER  
MILLIMETER  
EUGENE DIETZGEN CO.  
MADE IN U. S. A.

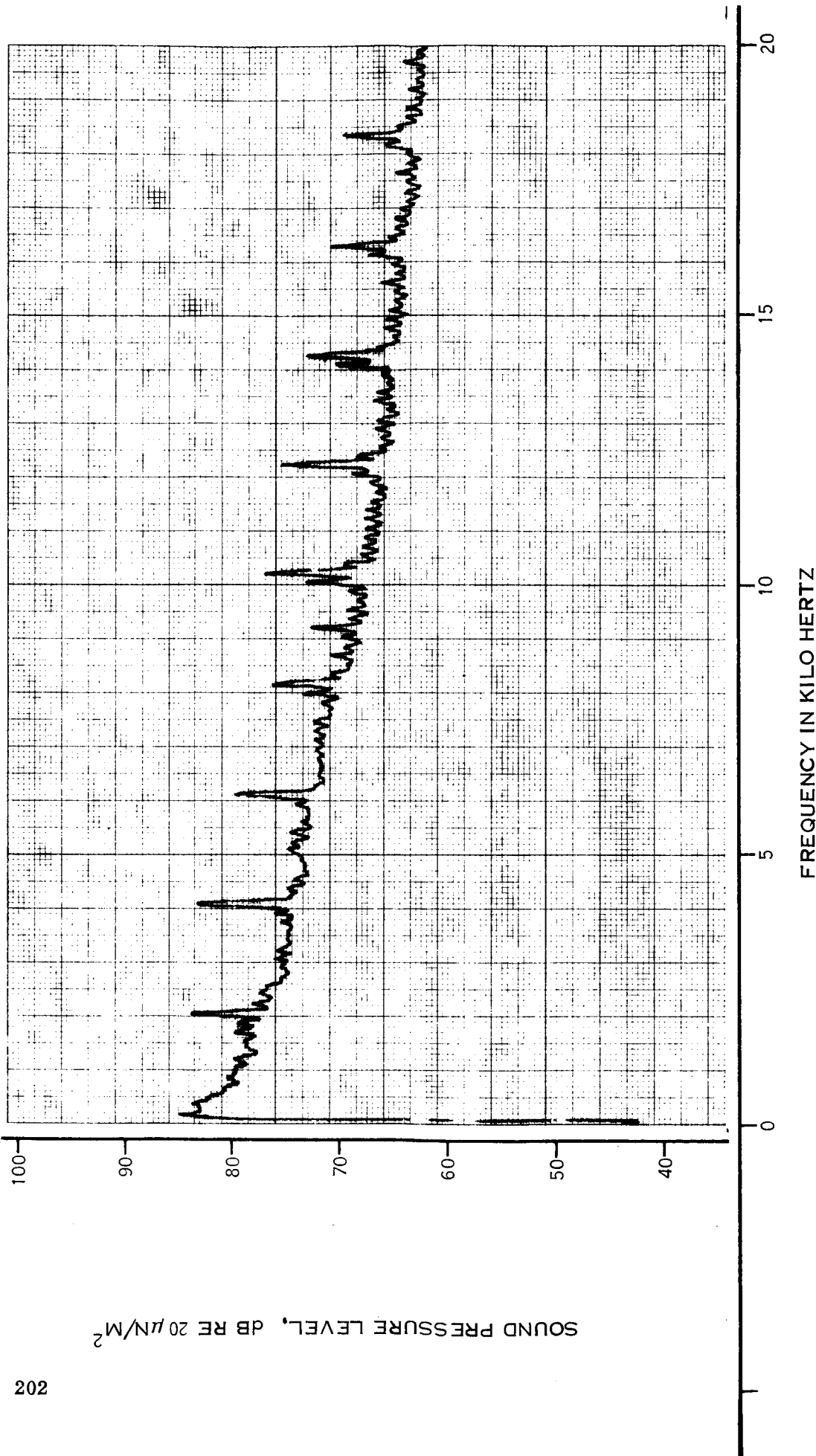


BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

EUGENE DIETZGEN CO.  
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NO. 3-10-M DIETZGEN GRAPH PAPER  
MILLIMETER



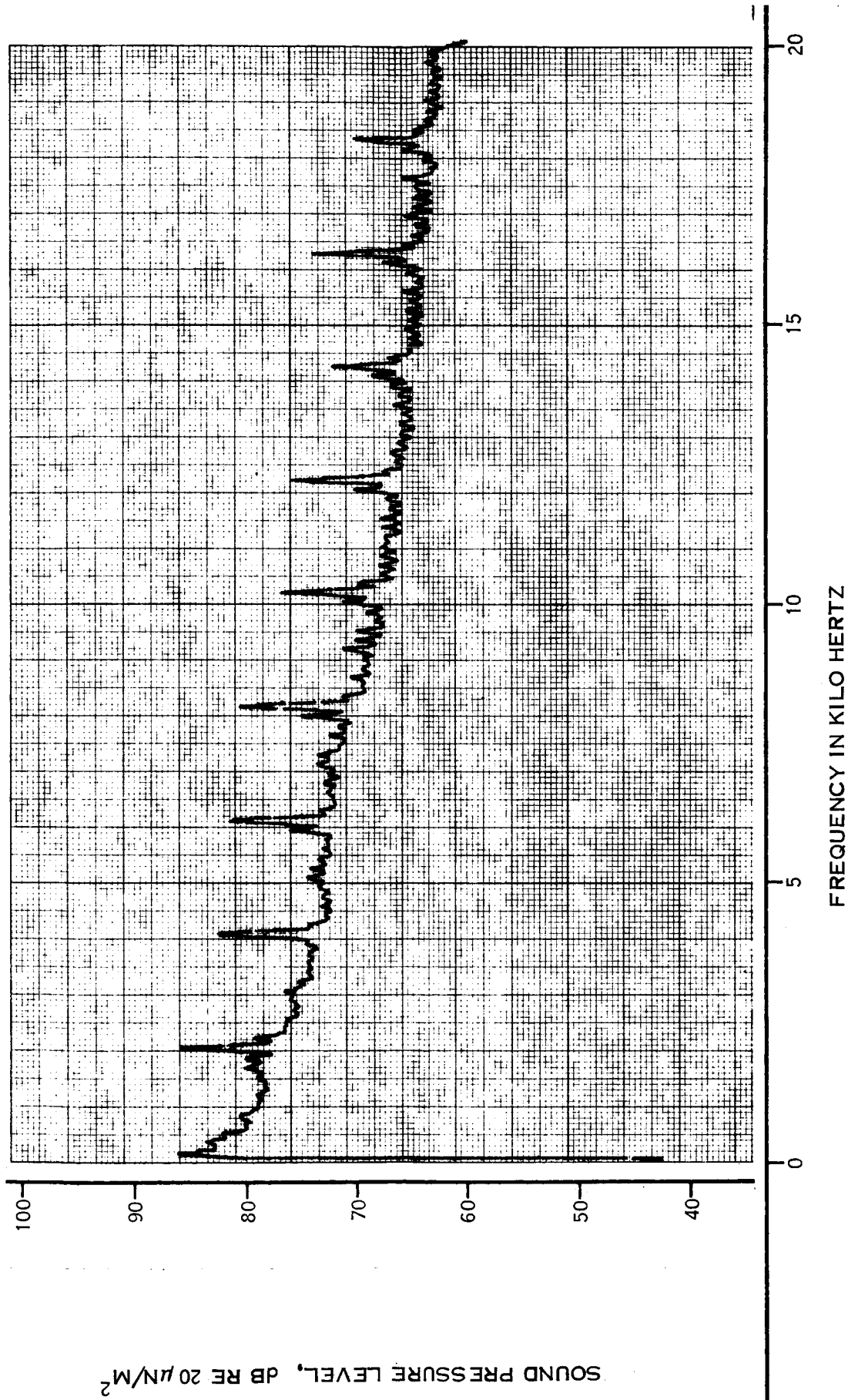
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)



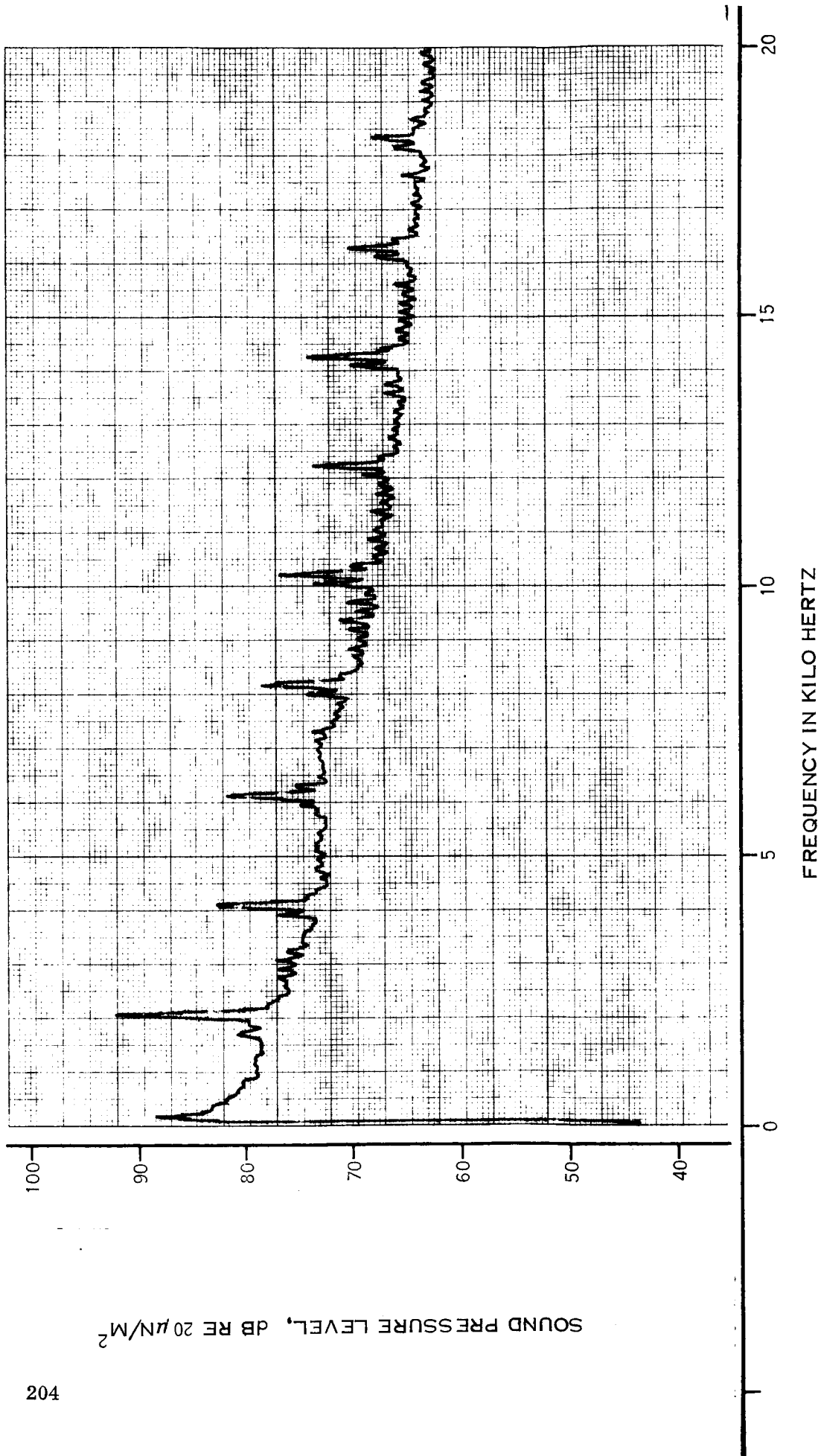
NO 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

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MADE IN U. S. A.



BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

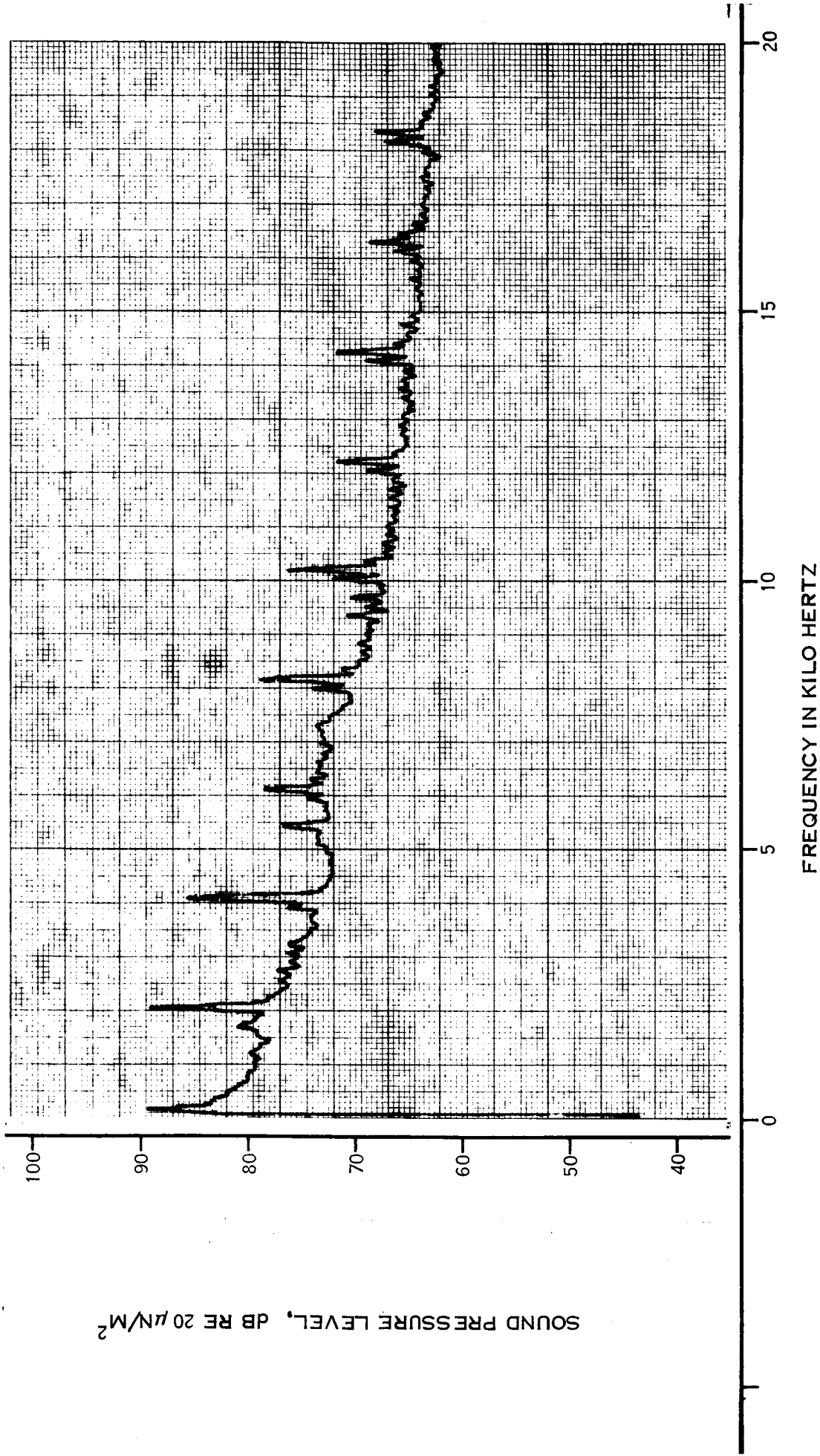


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

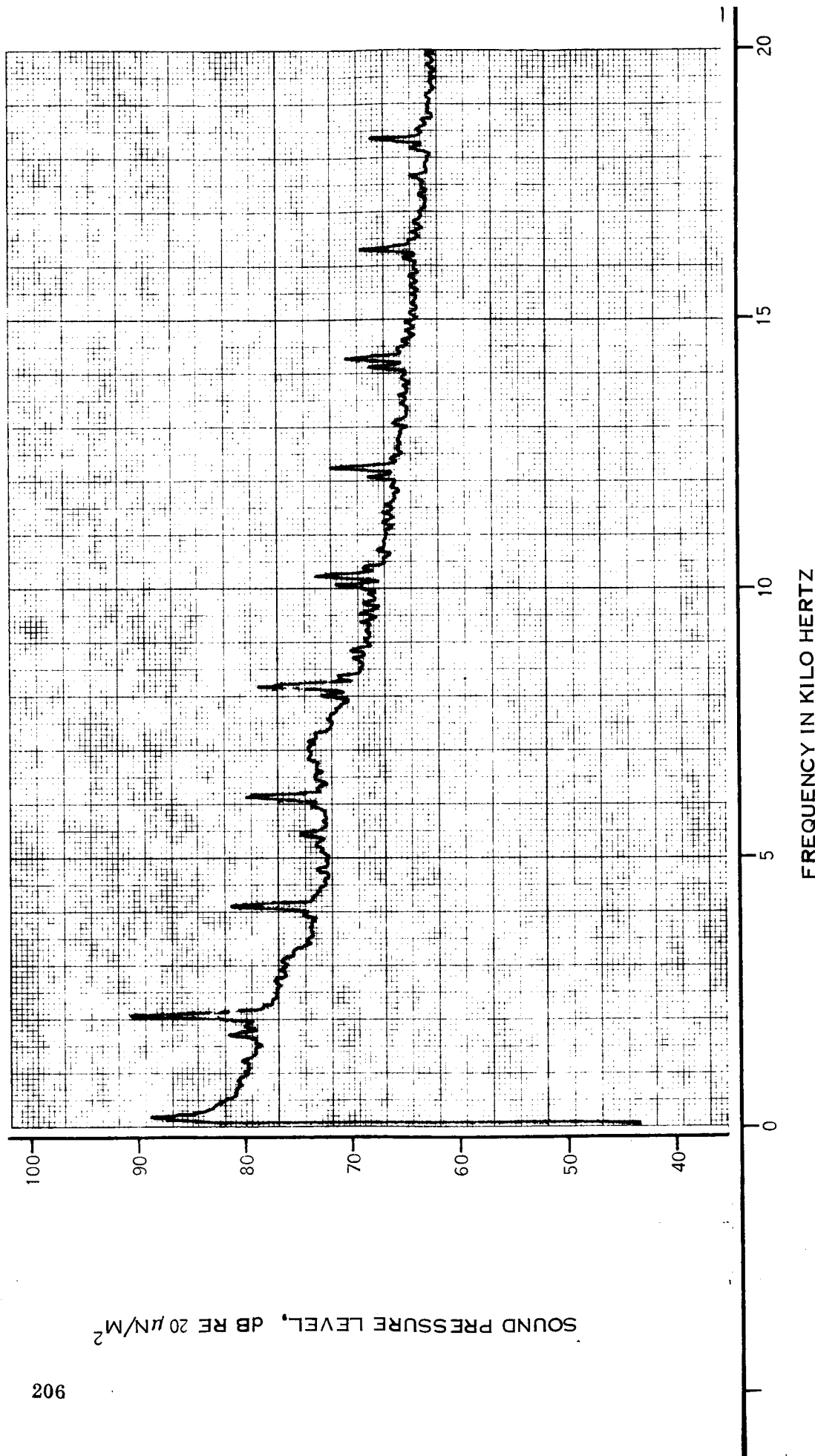
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

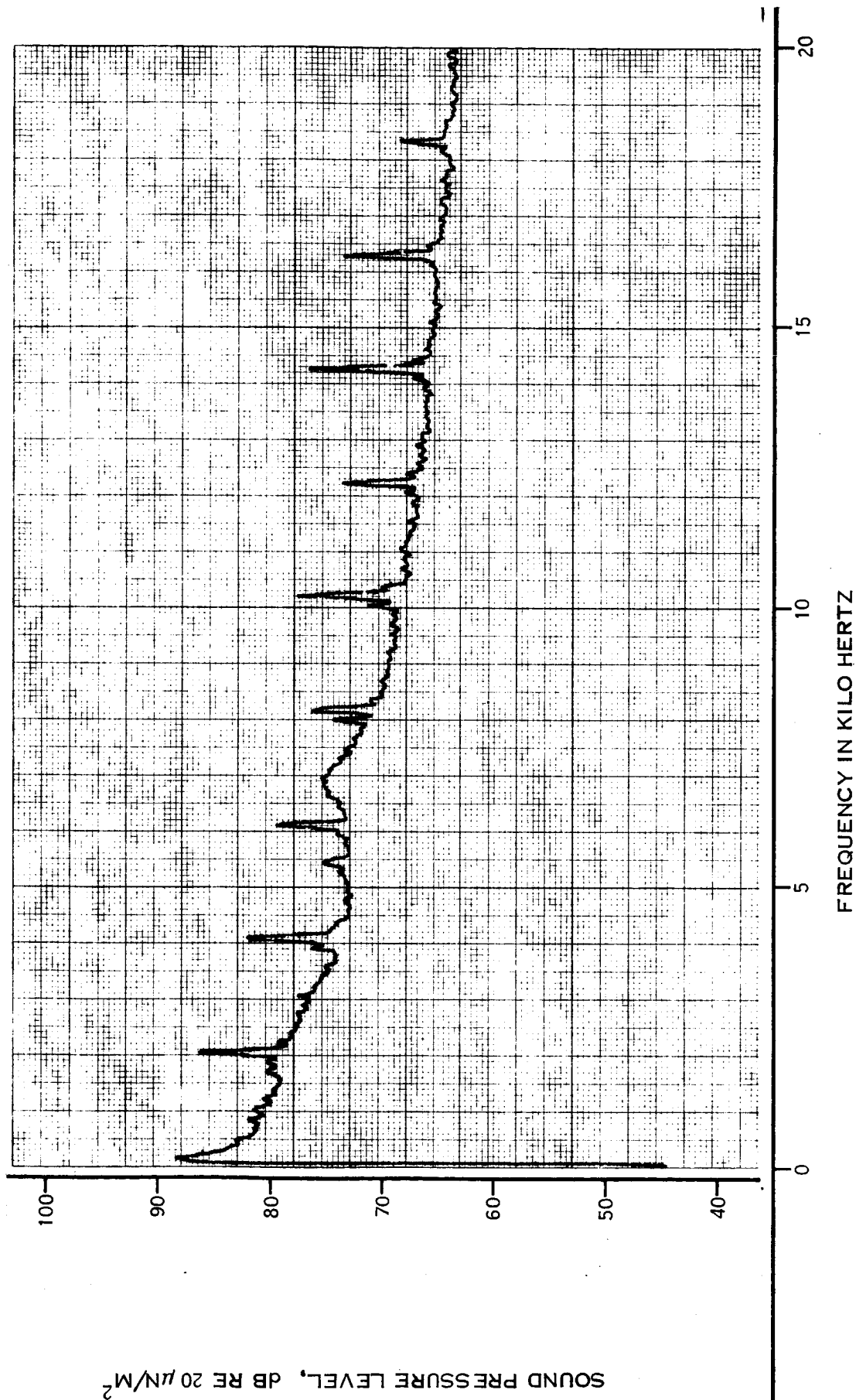


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

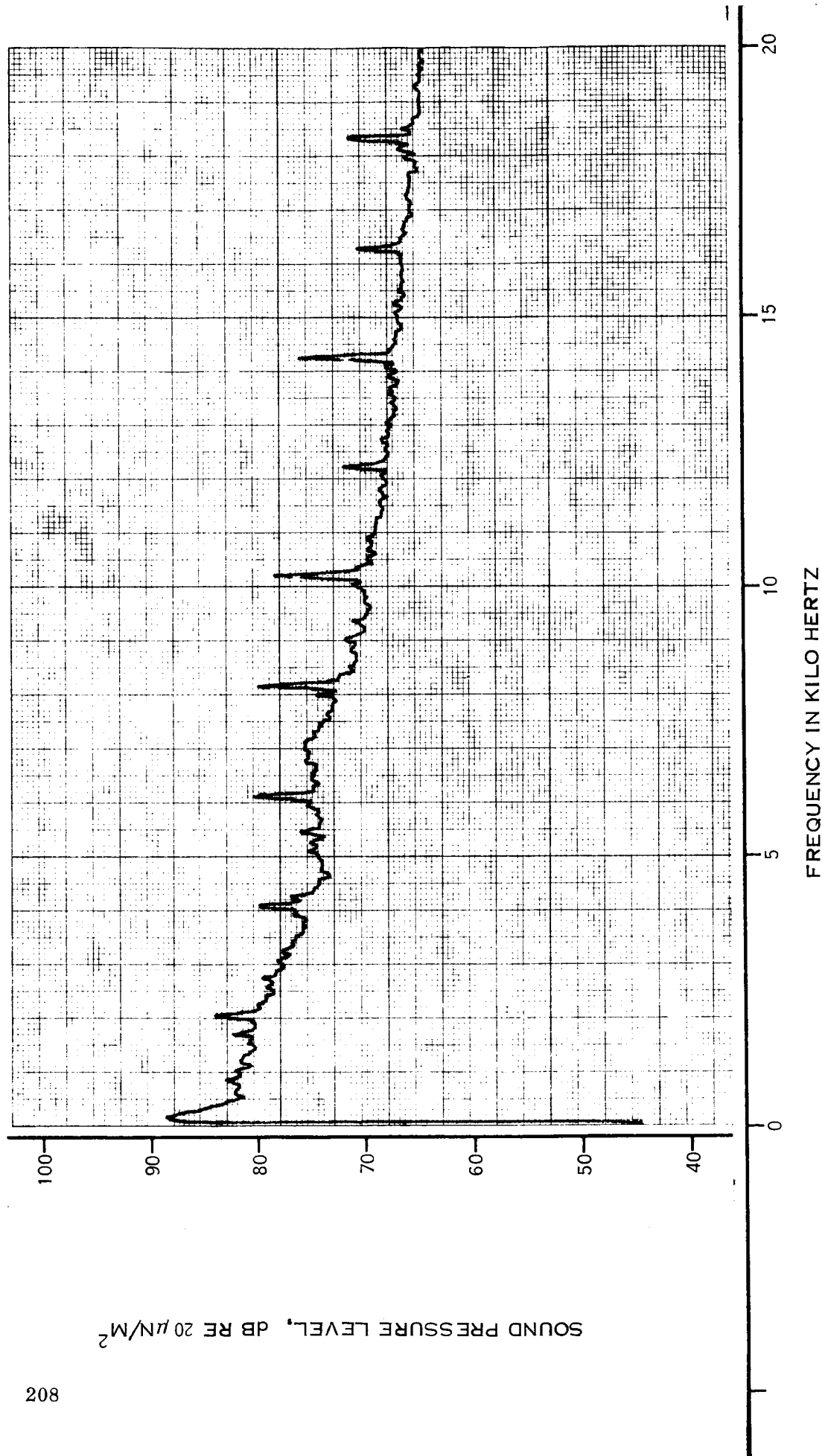
EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

NIT. 3-10-M DIETZGEN GRAPH PAPER  
EUGENE DIETZGEN CO.  
MADE IN U.S.A.  
MILLIMETER

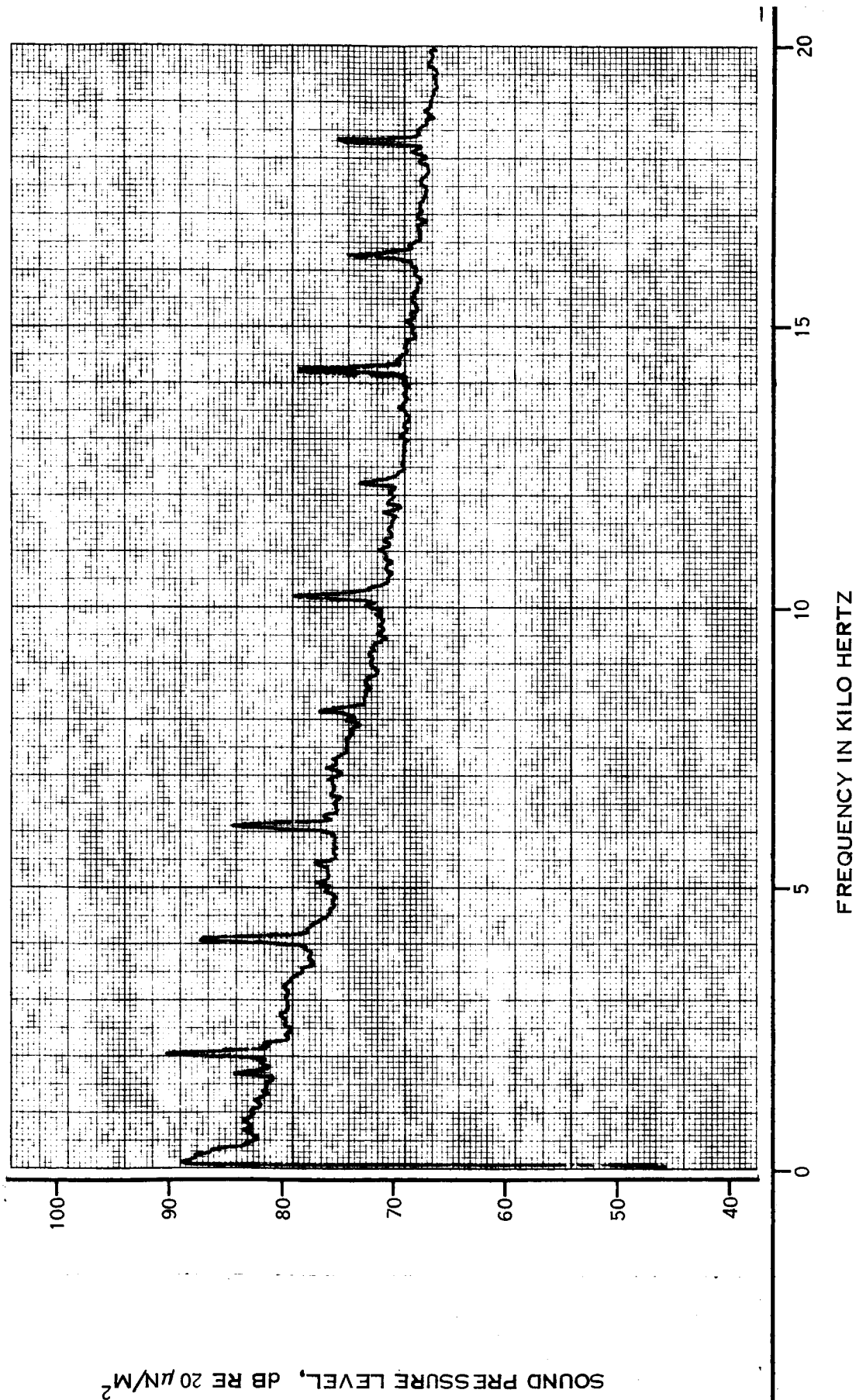


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 100 DEGREES AZIMUTH, 7.62 M (25 FT)

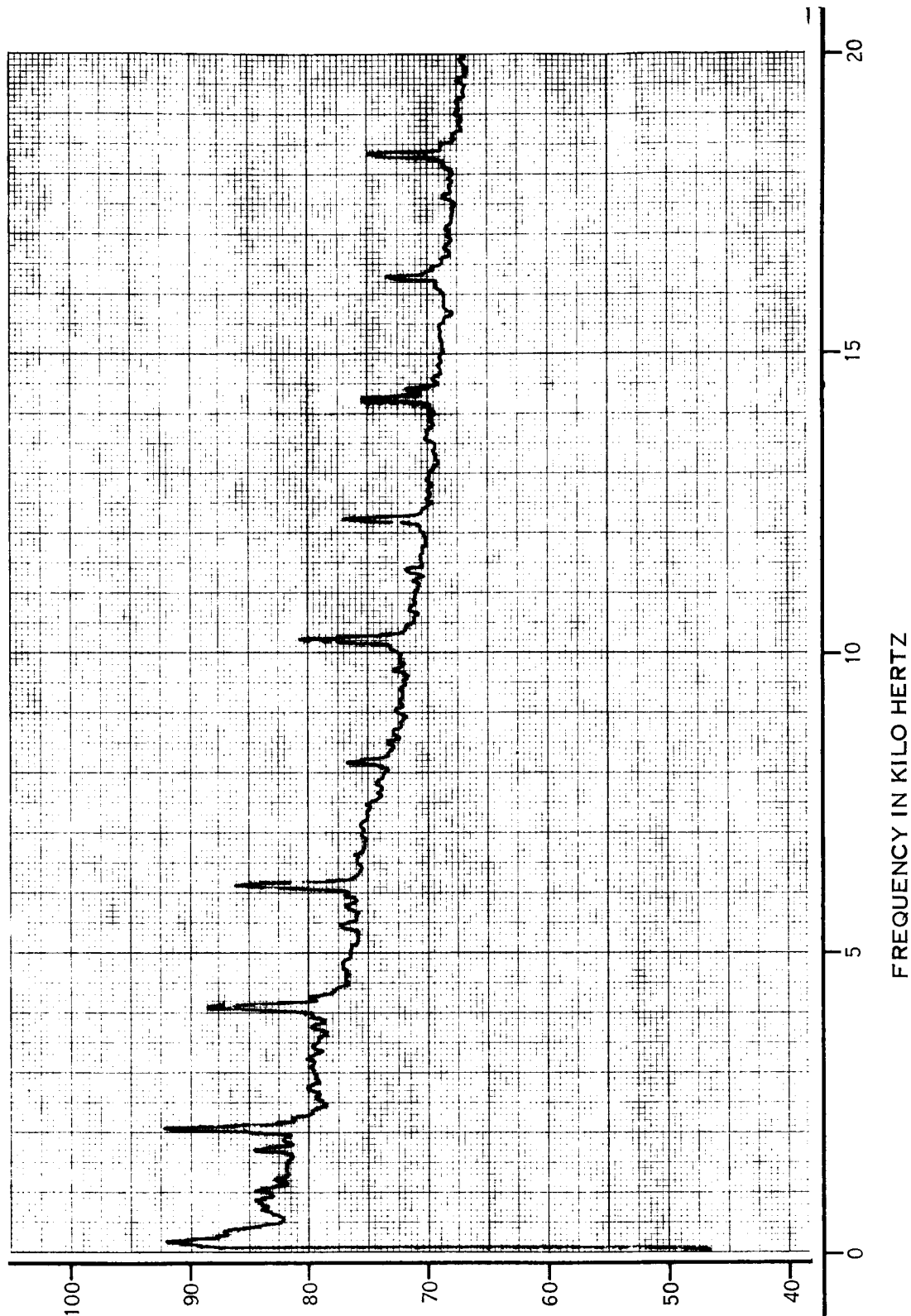
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)

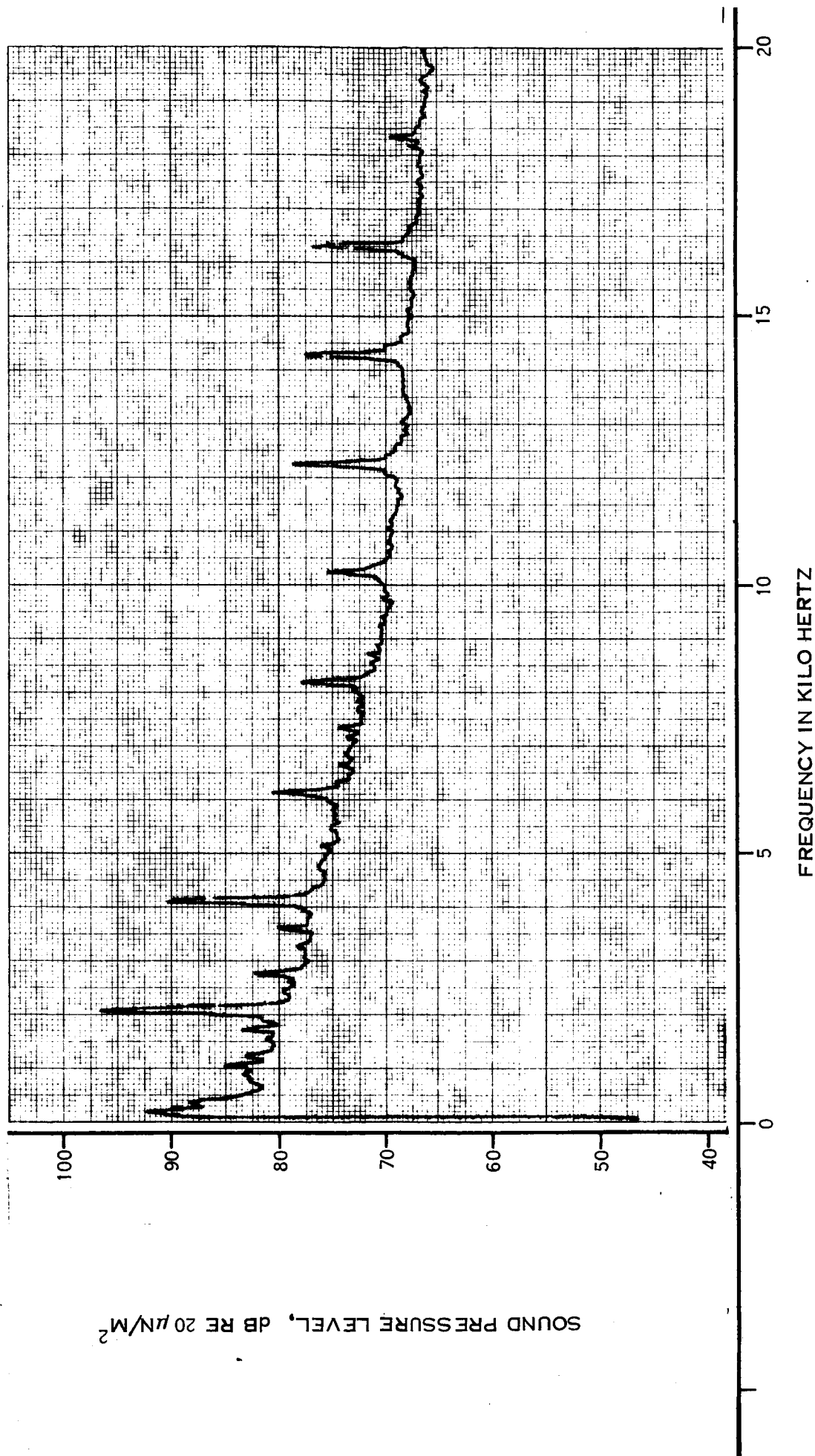
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

SOUND PRESSURE LEVEL, dB RE 20  $\mu\text{N}/\text{M}^2$ EUGENE DIETZEN CO.  
MADE IN U. S. A.EUGENE DIETZEN GRAPH PAPER  
MILLIMETER60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)



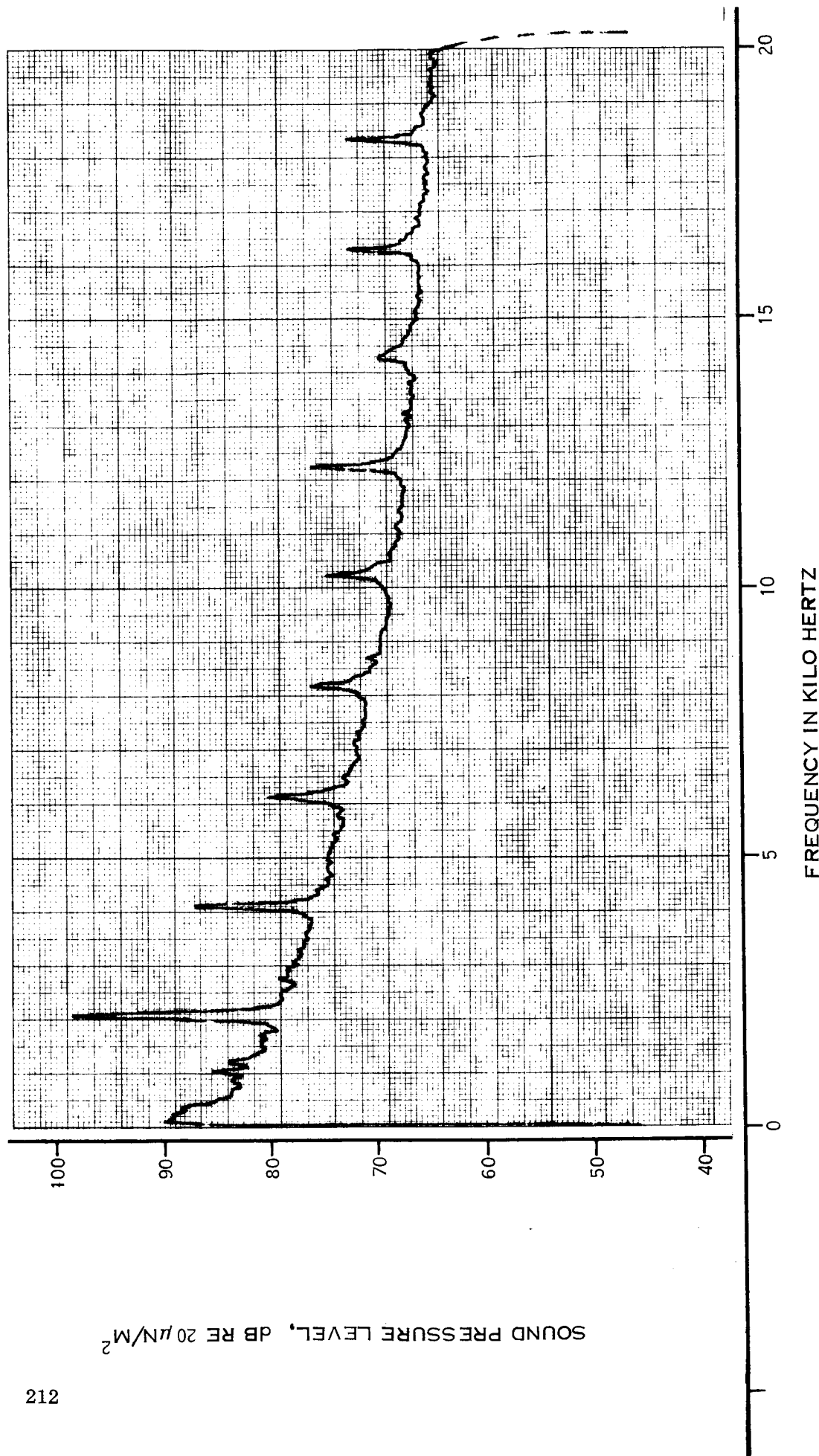
NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



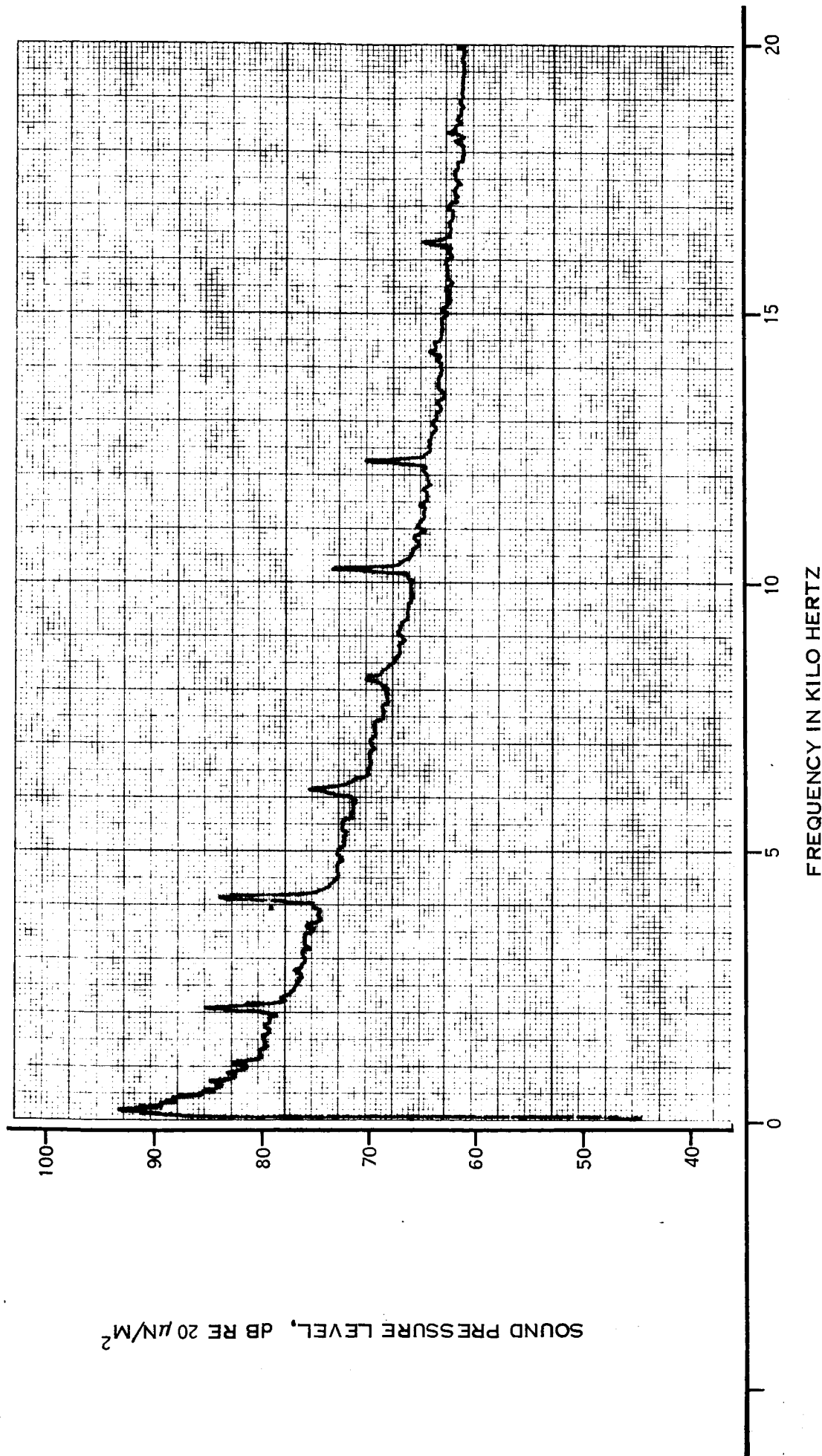
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512 ENSEMBLES  
TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)

EUGENE DIETZGEN CO.  
MADE IN U. S. A.NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 140 DEGREES AZIMUTH, 7.62 M (25 FT)

EUGENE DIETZGEN CO.  
MADE IN U. S. A.

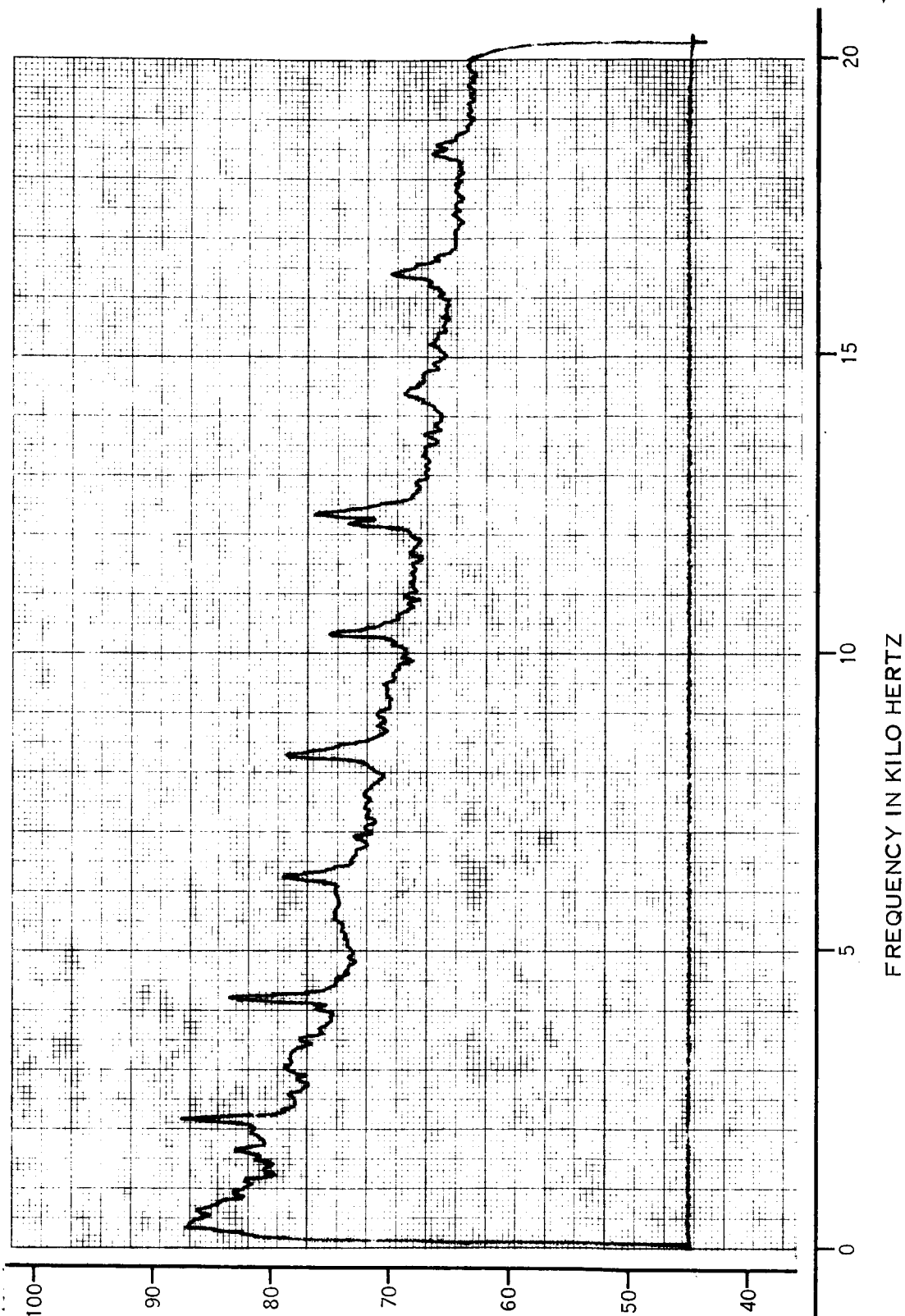
146 345 M DIETZGEN GRAPH PAPER  
MILLIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 24

BLADE ANGLE: 43.0 DEGREES  
TIP SPEED: 244 M/SEC (801 FT/SEC)  
MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)

SOUND PRESSURE LEVEL, DB RE 20  $\mu$ N/M<sup>2</sup>

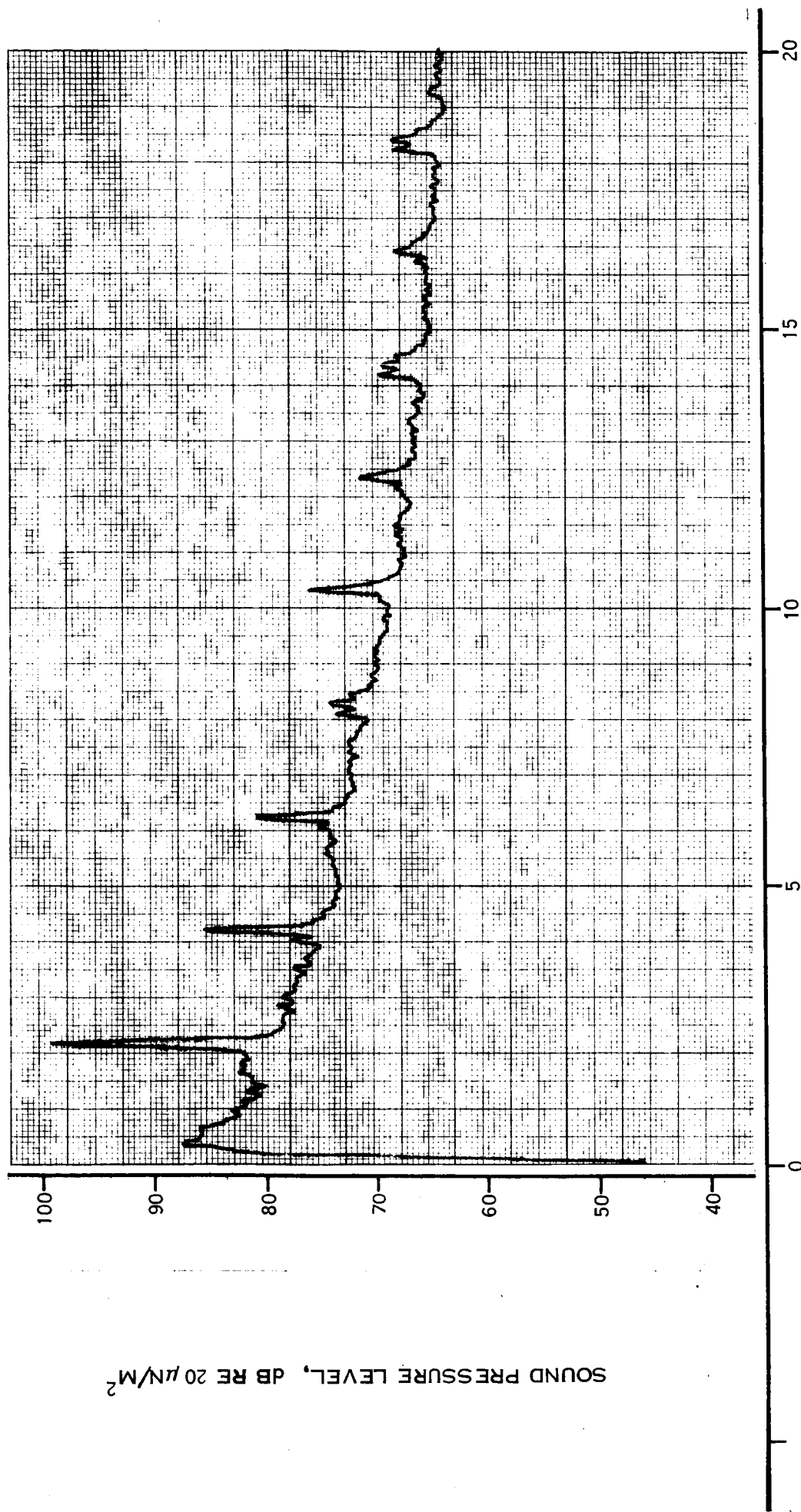


60 HERTZ BAND WIDTH  
256 ENSEMBLES  
TEST CONDITION NUMBER: 28

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 0 DEGREES AZIMUTH, 7.62 M (25 FT)

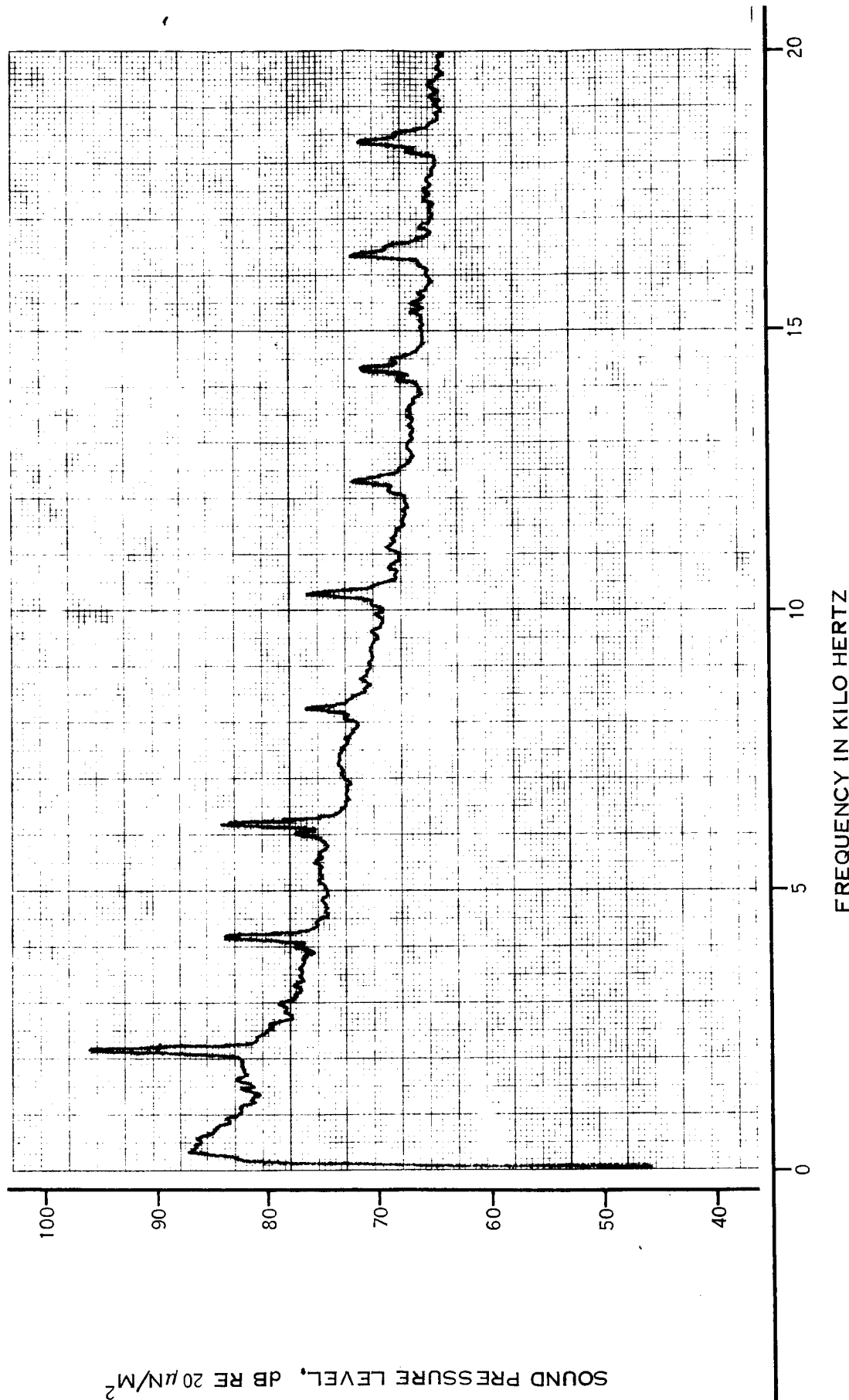
EUGENE F. TIZENLID.  
MADE IN U.S.A.

NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 10 DEGREES AZIMUTH, 7.62 M (25 FT)

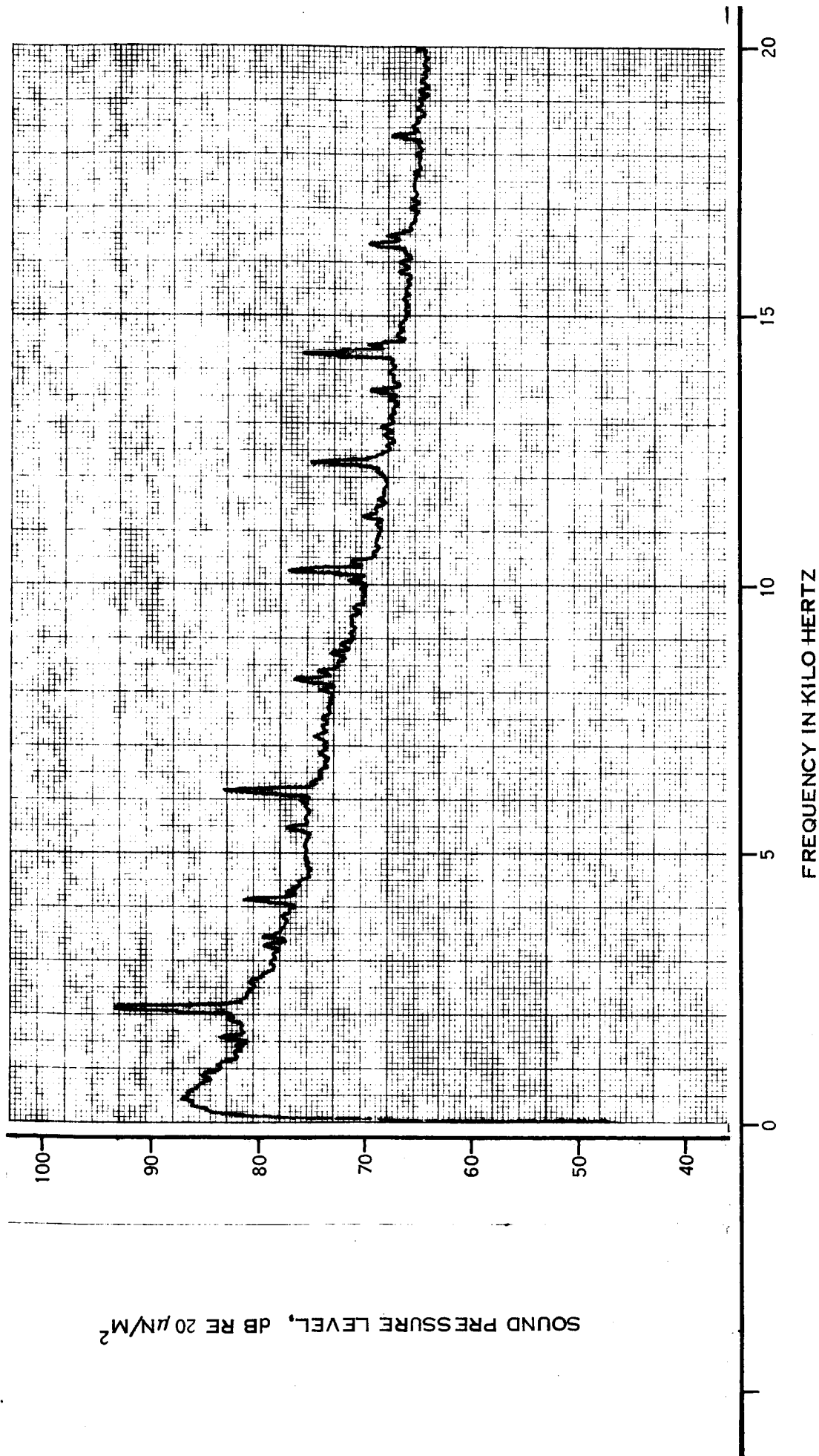


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 20 DEGREES AZIMUTH, 7.62 M (25 FT)

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NO. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



BLADE ANGLE: 52.6 DEGREES

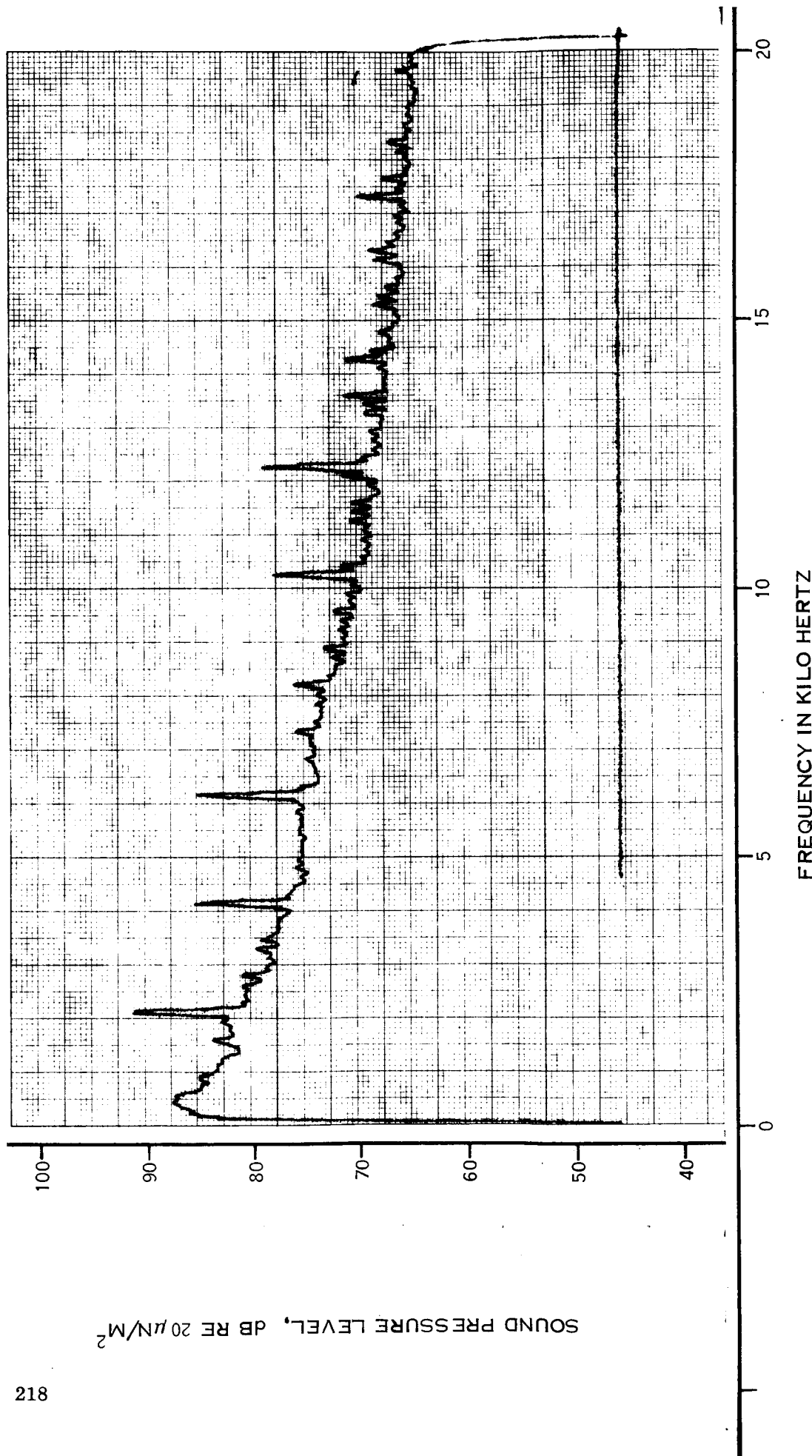
TIP SPEED: 243 M/SEC (797 FT/SEC)

MICROPHONE LOCATION: 30 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 28



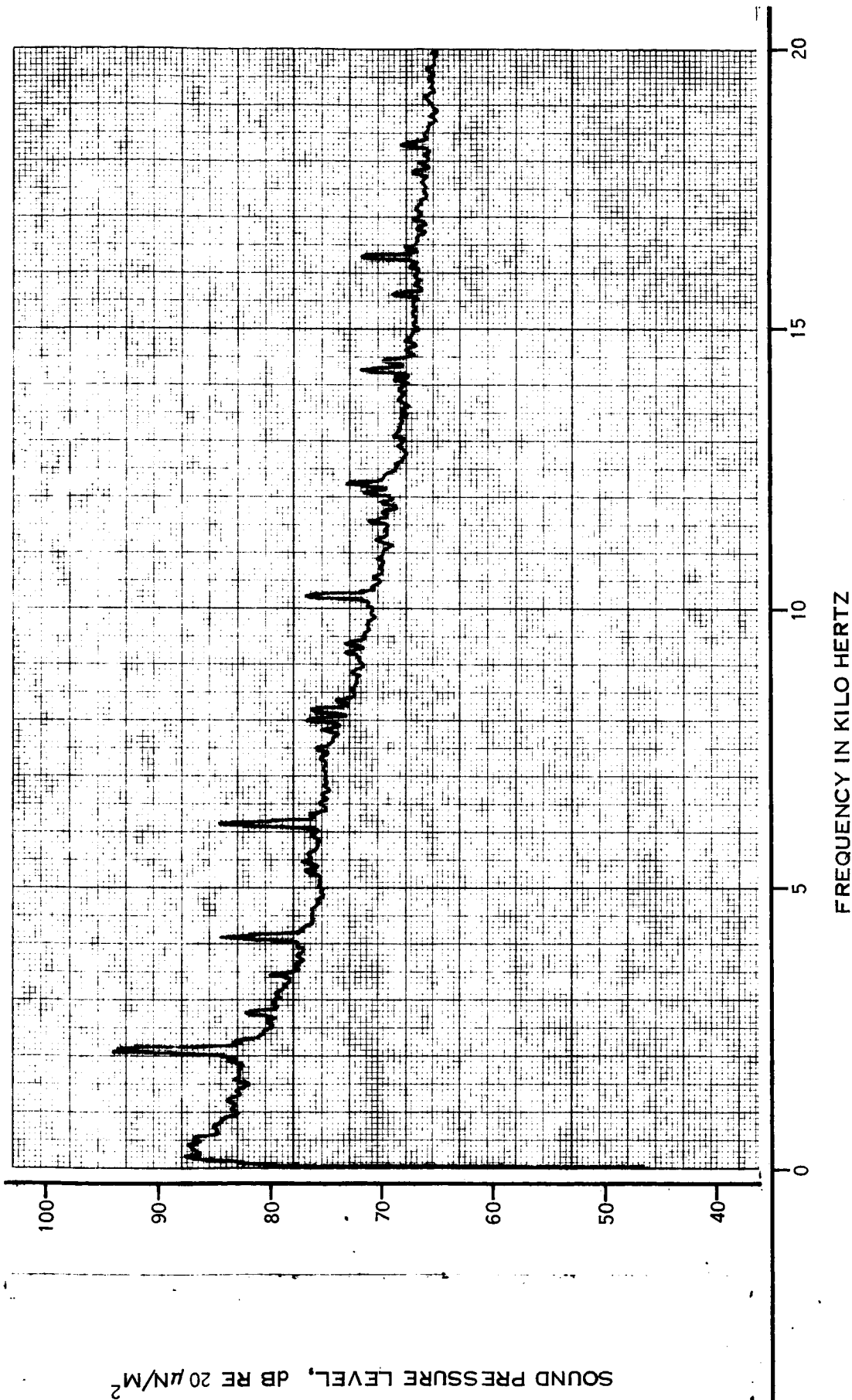
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 40 DEGREES AZIMUTH, 7.62 M (25 FT)



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MILLIMETER



BLADE ANGLE: 52.6 DEGREES

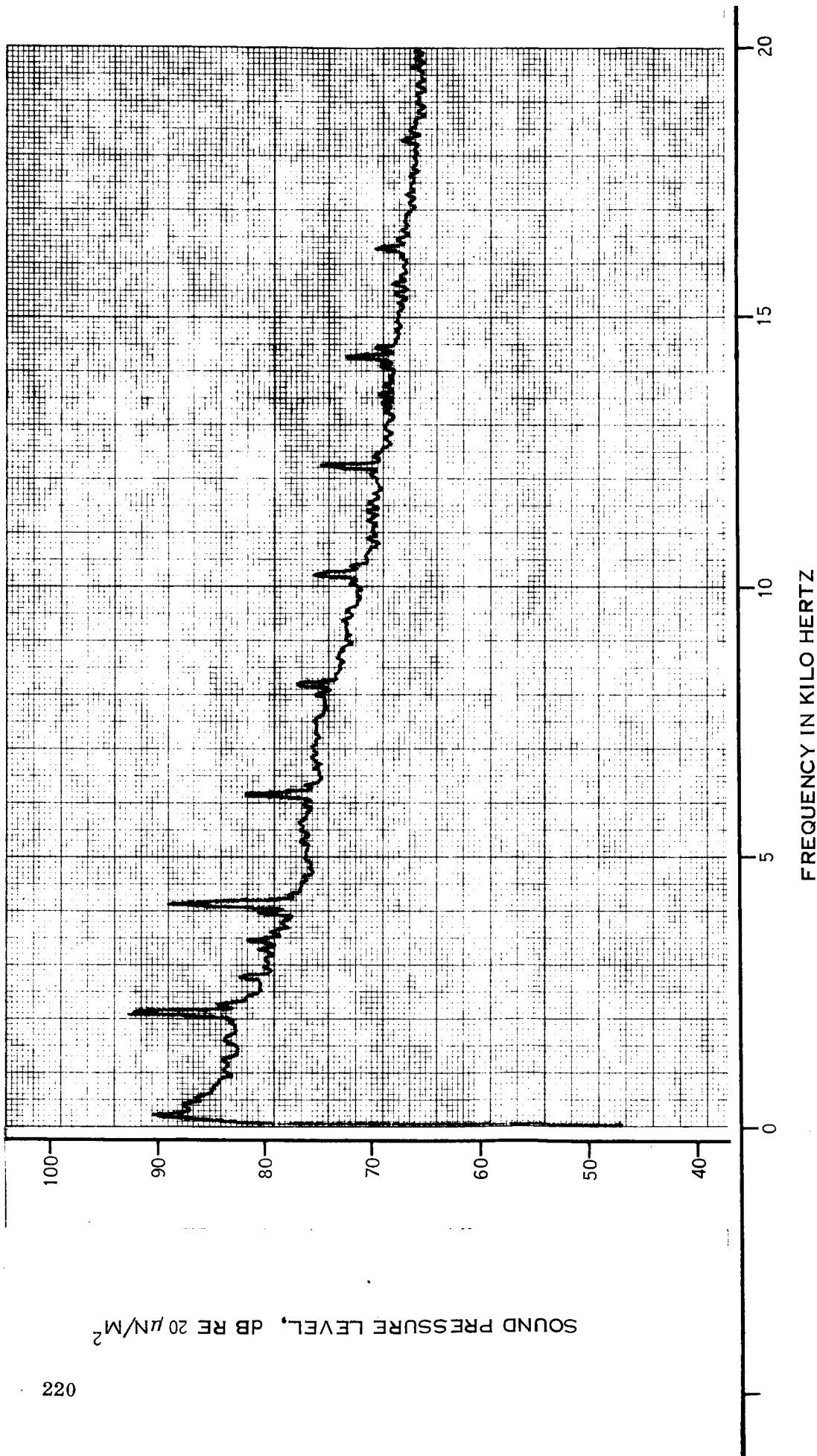
TIP SPEED: 243 M/SEC (797 FT/SEC)

MICROPHONE LOCATION: 50 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH

512 ENSEMBLES

TEST CONDITION NUMBER: 28

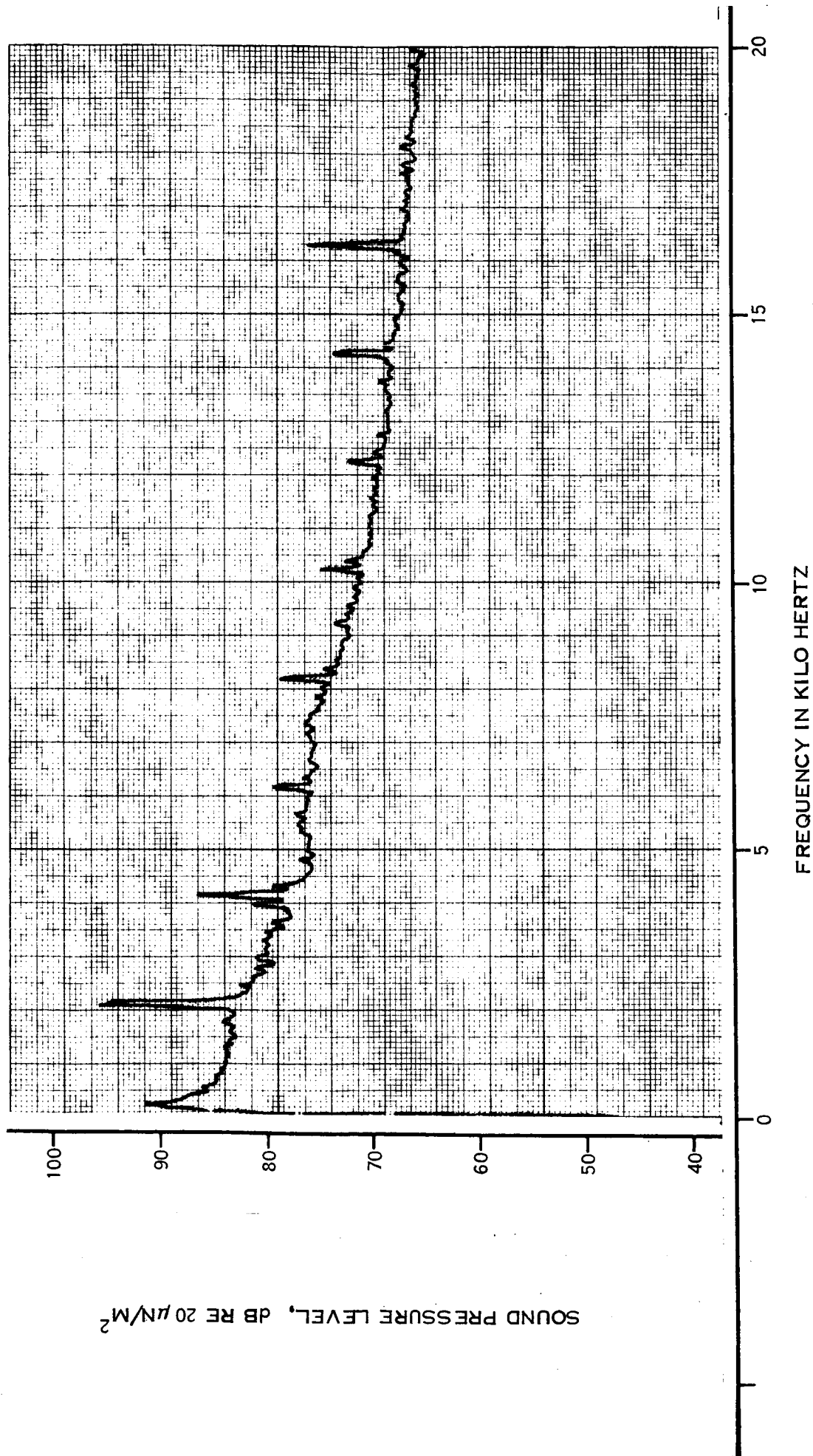


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 60 DEGREES AZIMUTH, 7.62 M (25 FT)

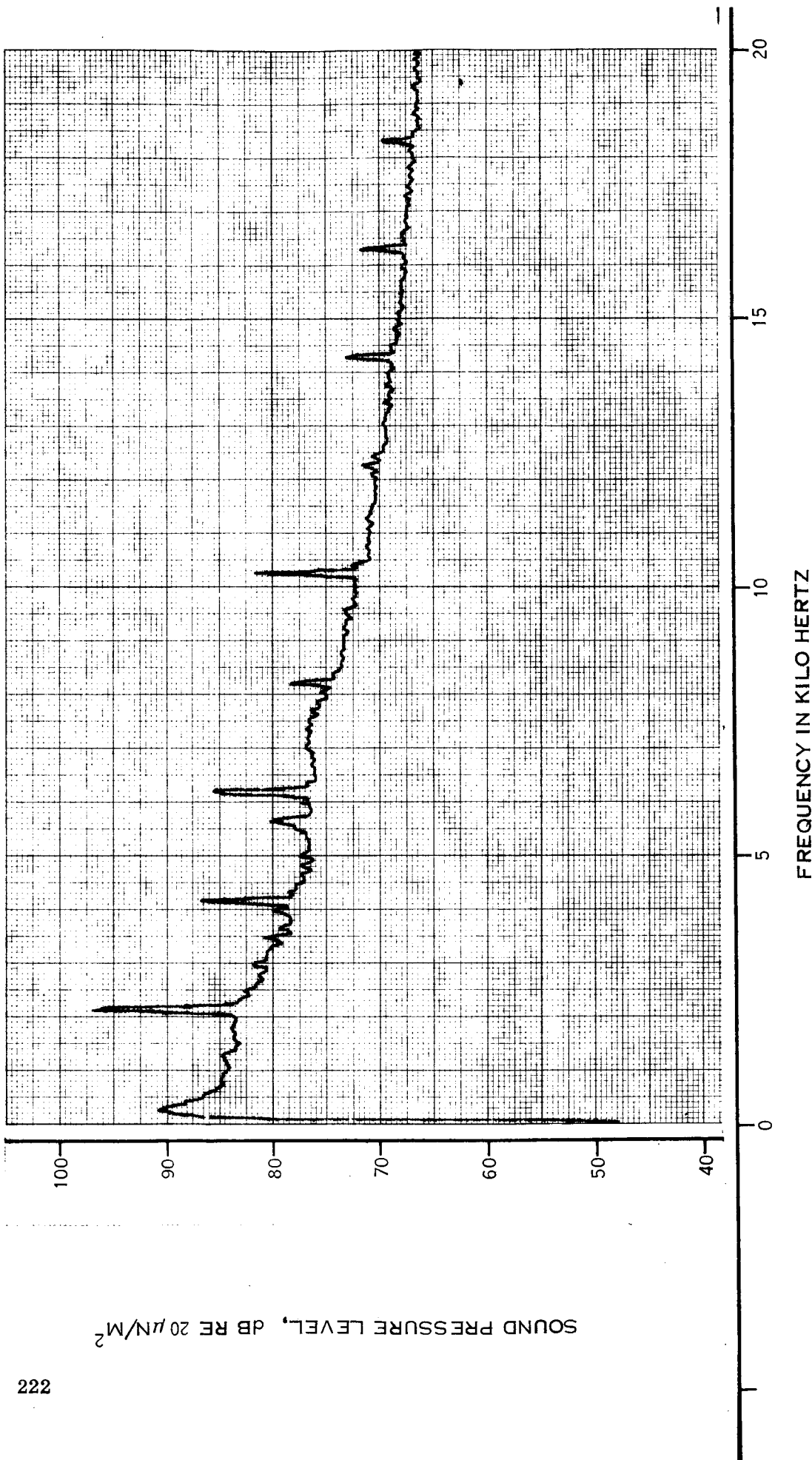
NO. 34D-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 70 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

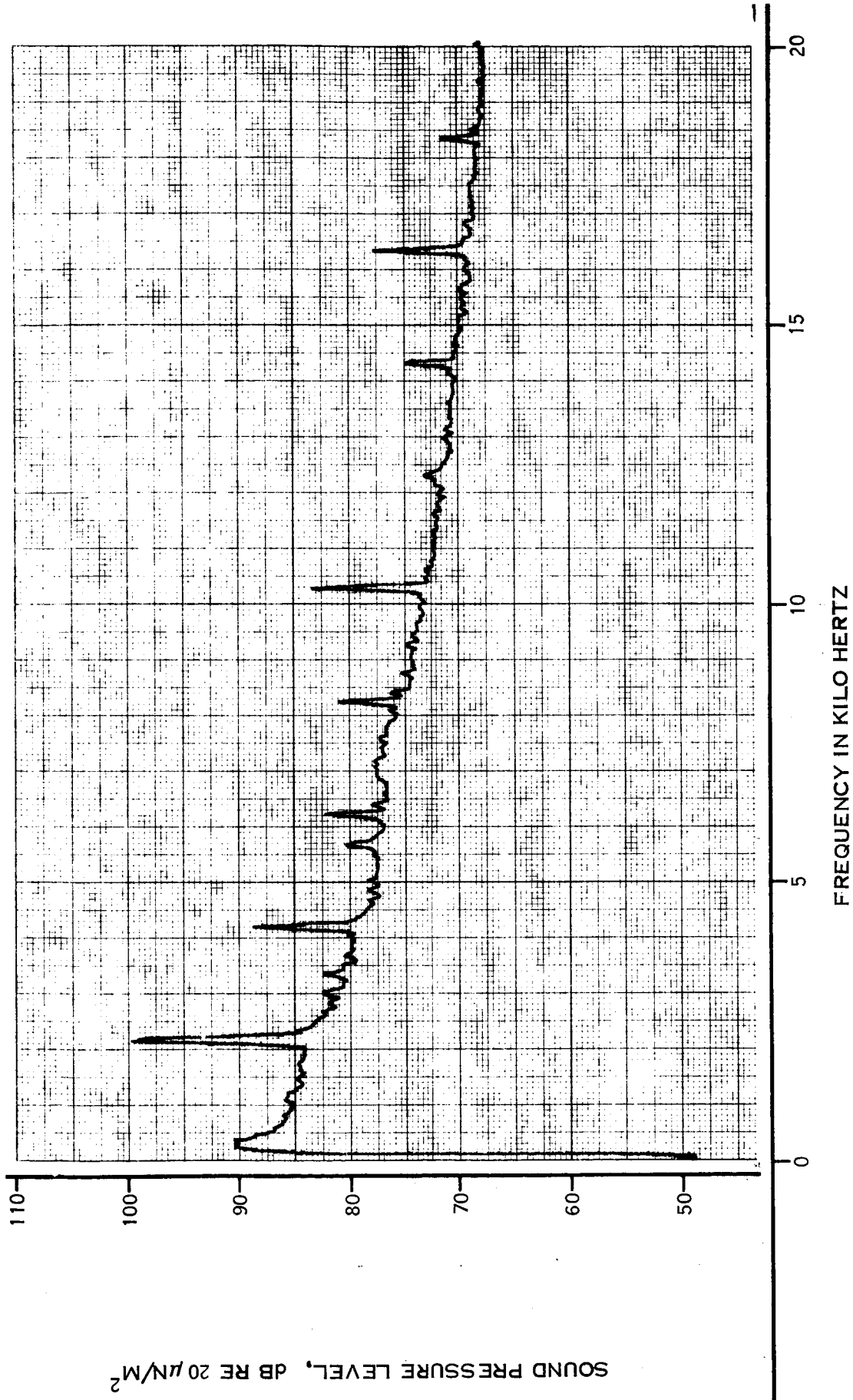


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 80 DEGREES AZIMUTH, 7.62 M (25 FT)

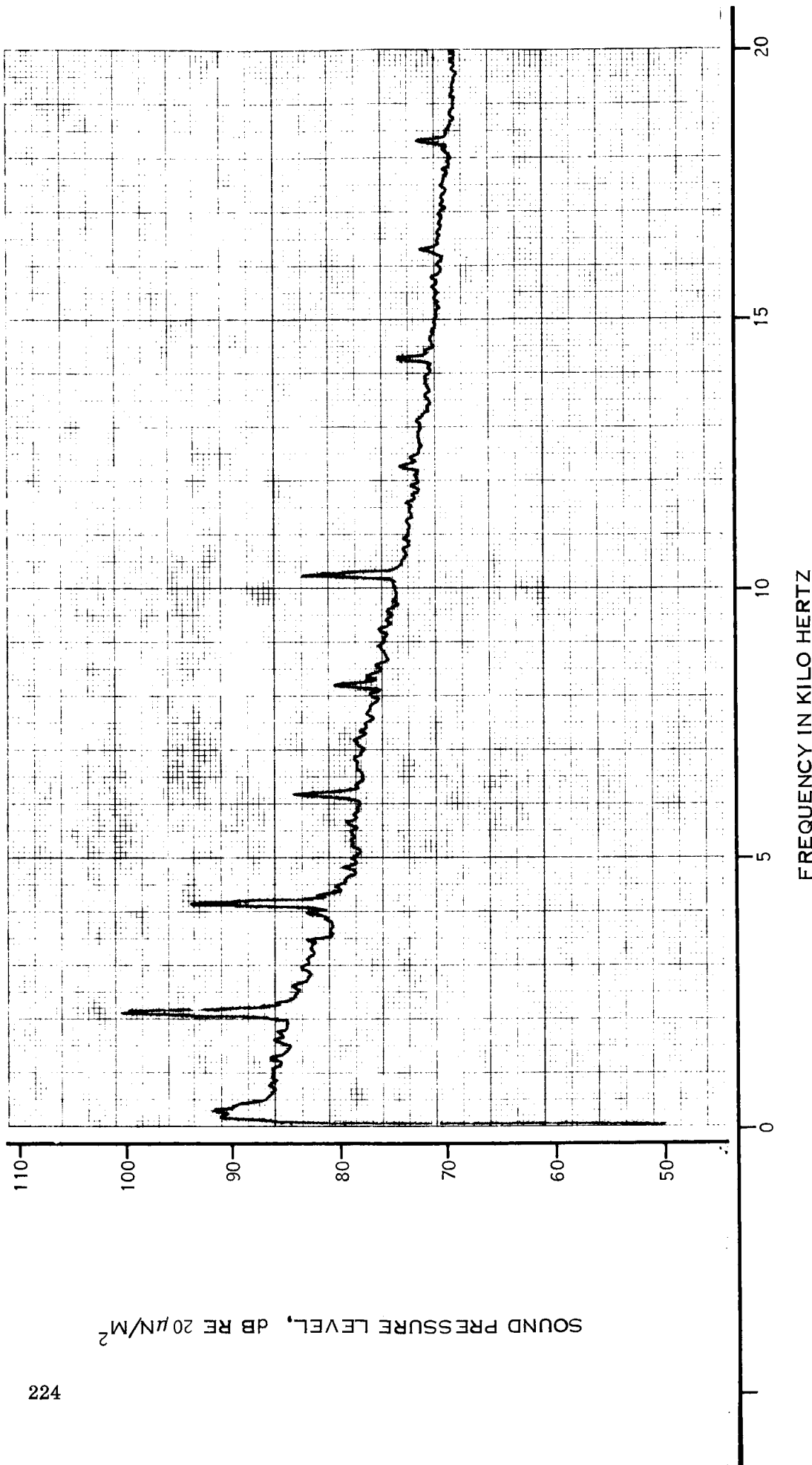
ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

EUGENE DIETZGEN CO.  
MADE IN U. S. A.



BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 90 DEGREES AZIMUTH, 7.62 M (25 FT)

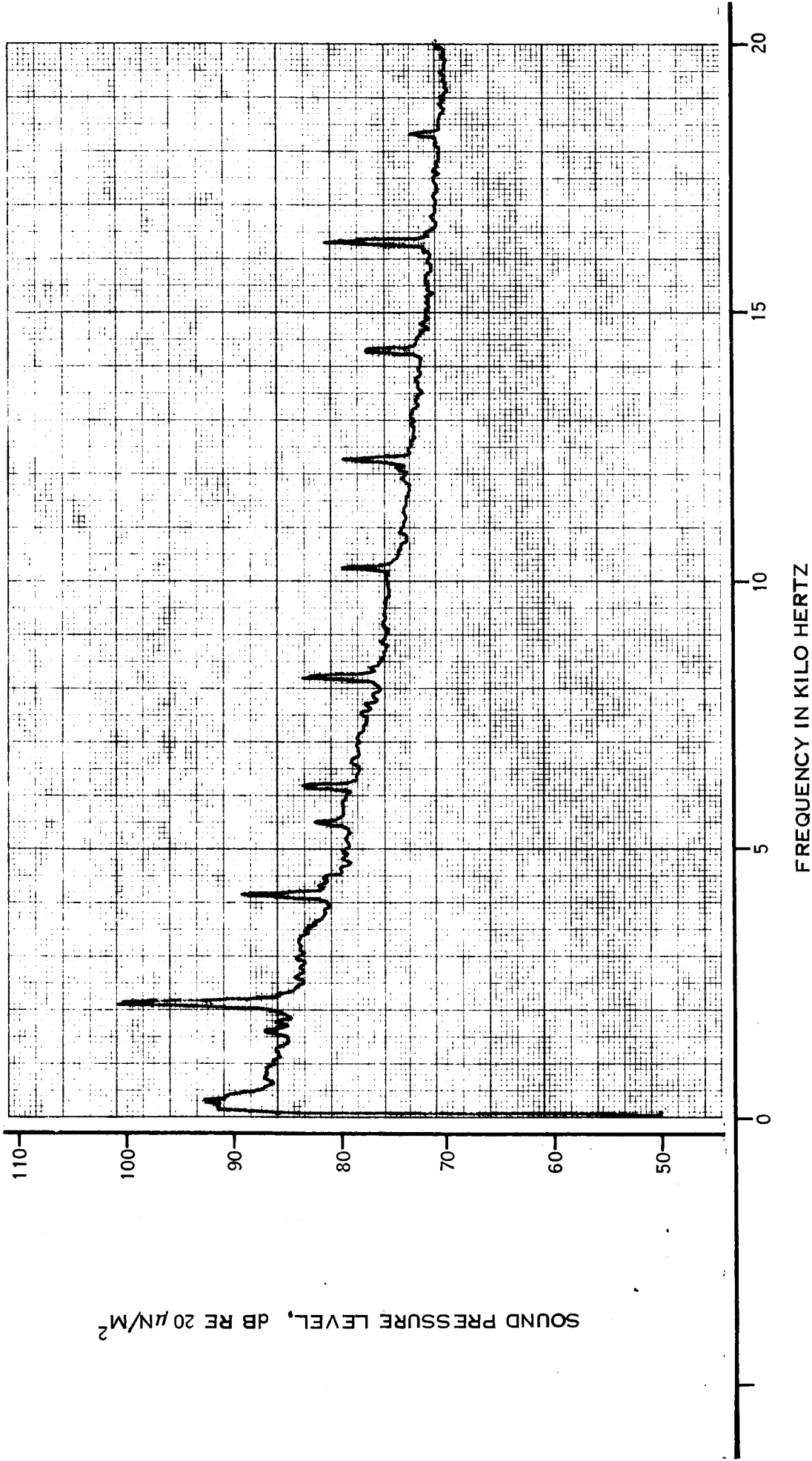
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28



60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

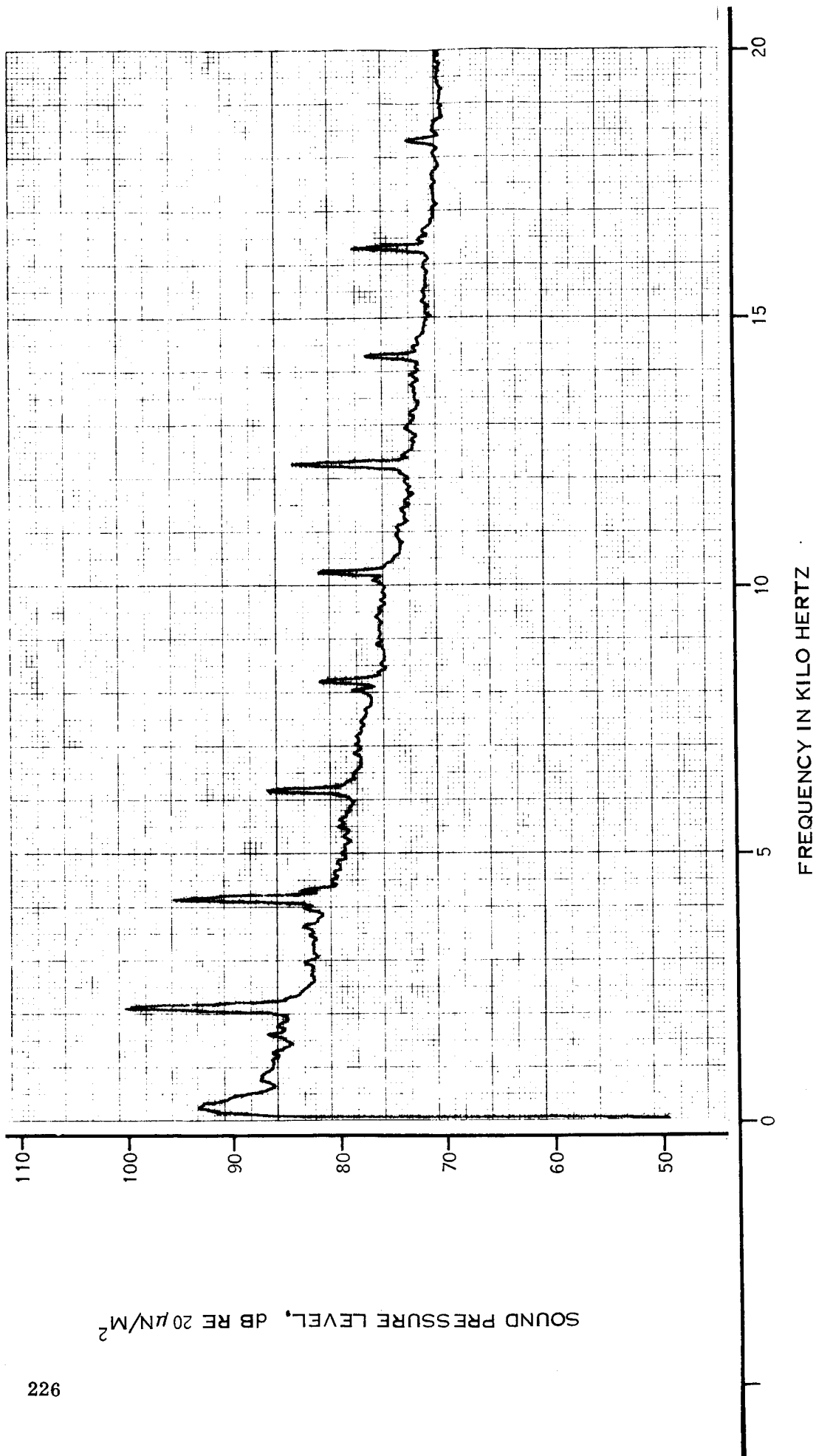
BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 100 DEGREES AZIMUTH, 7.62 M (25 FT)

NO. 340-N DIETZEN GRAPH PAPER  
MILLIMETER  
EUGENE DIEZGEN CO  
MADE IN U.S.A.



BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
2 MICROPHONE LOCATION: 110 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28



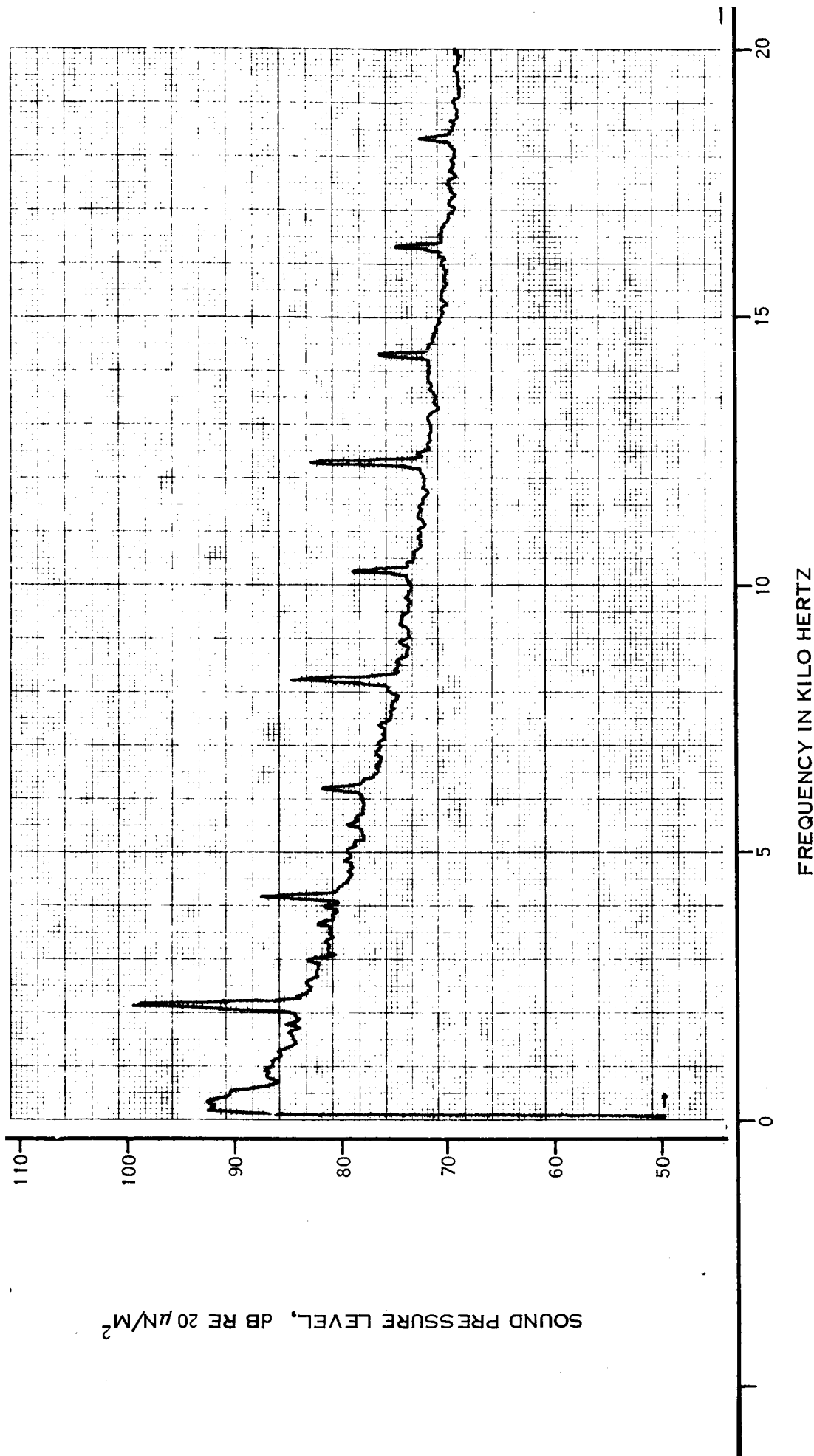
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 120 DEGREES AZIMUTH, 7.62 M (25 FT)



ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER

FLUETHE DIETZGEN CO.  
MADE IN U. S. A.

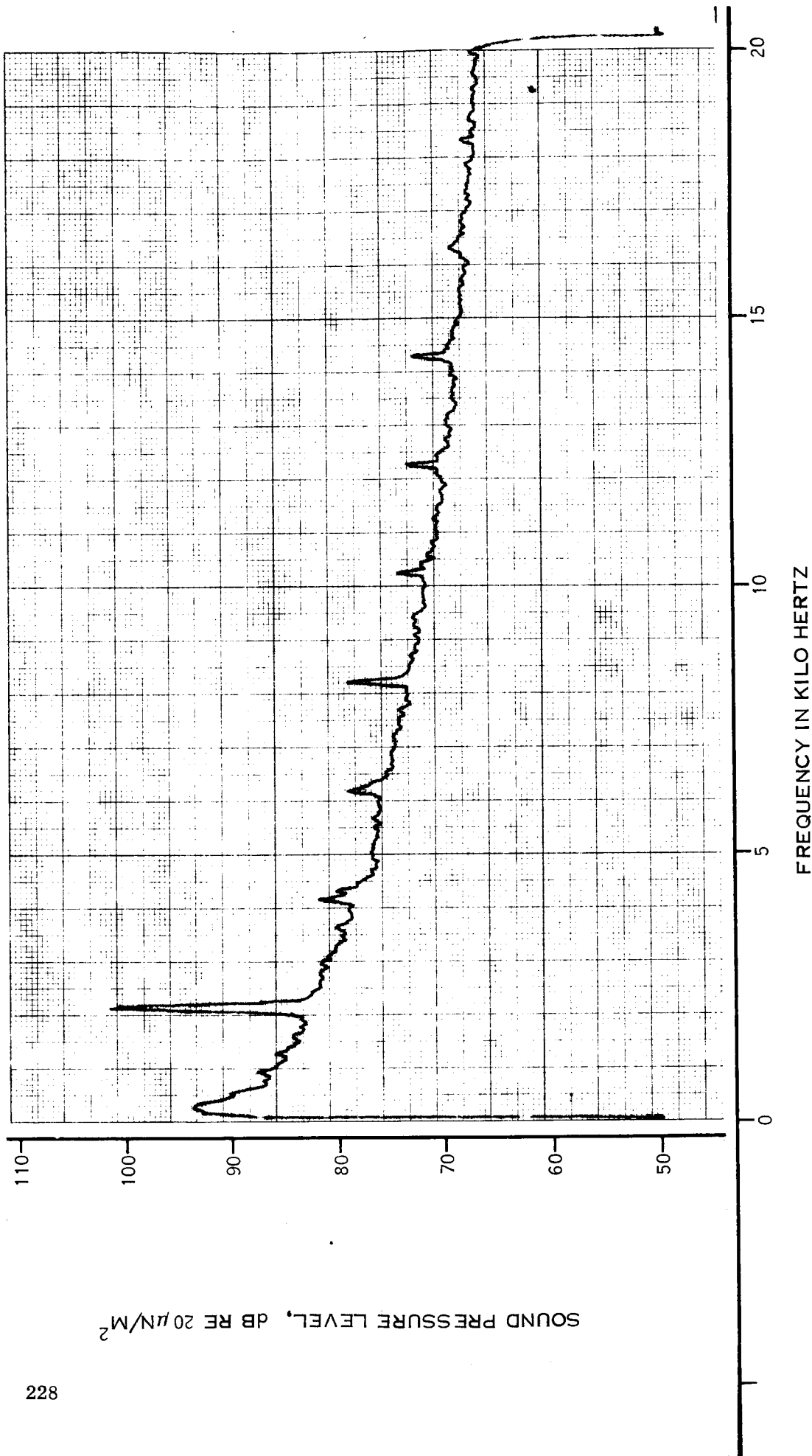


BLADE ANGLE: 52.6 DEGREES

TIP SPEED: 243 M/SEC (797 FT/SEC)

MICROPHONE LOCATION: 130 DEGREES AZIMUTH, 7.62 M (25 FT)

60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

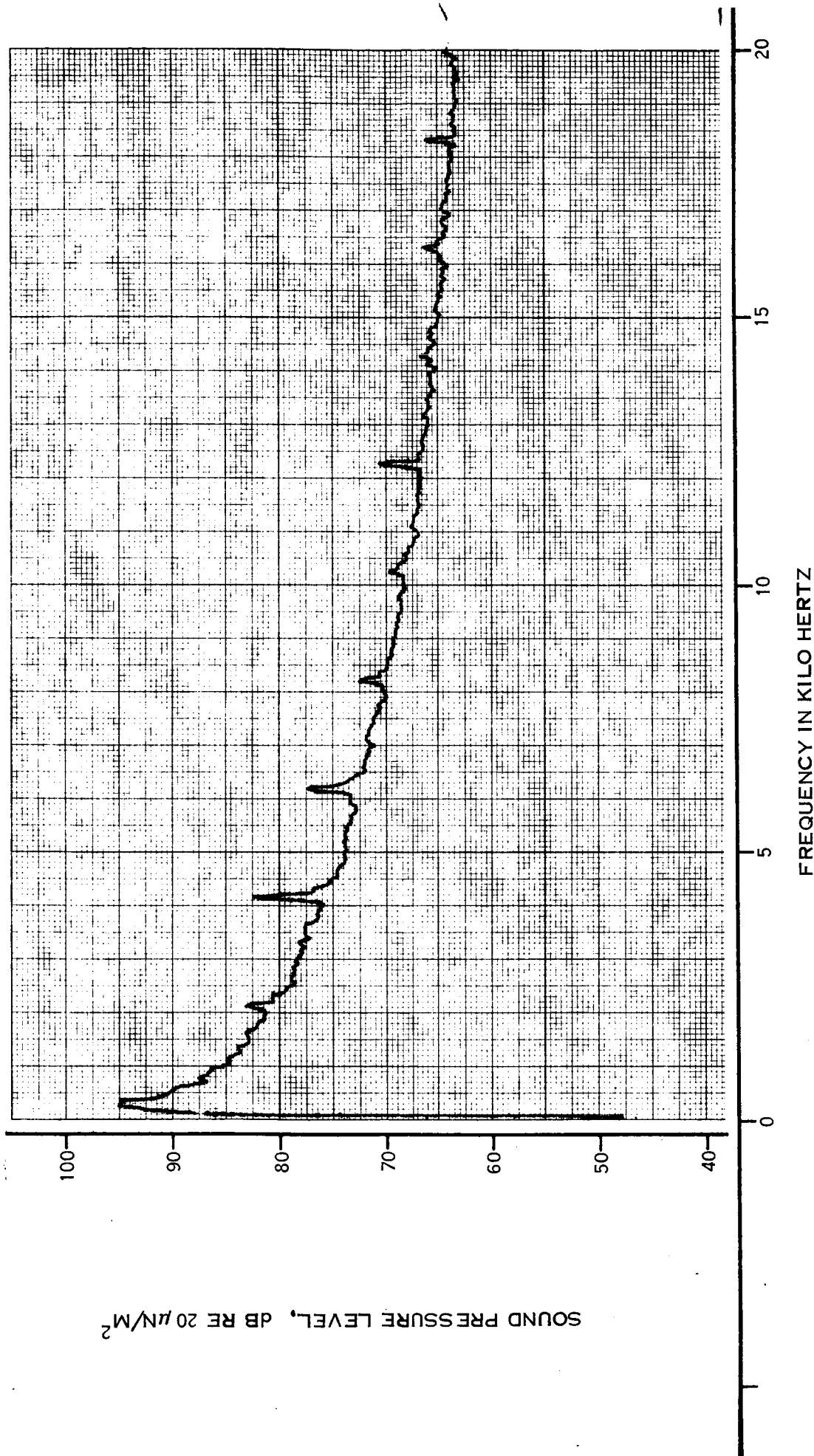


60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 140 DEGREES AZIMUTH, 7.62 M (25 FT)

EUGENE DIETZGEN CO.  
MADE IN U. S. A.

ND. 340-M DIETZGEN GRAPH PAPER  
MILLIMETER



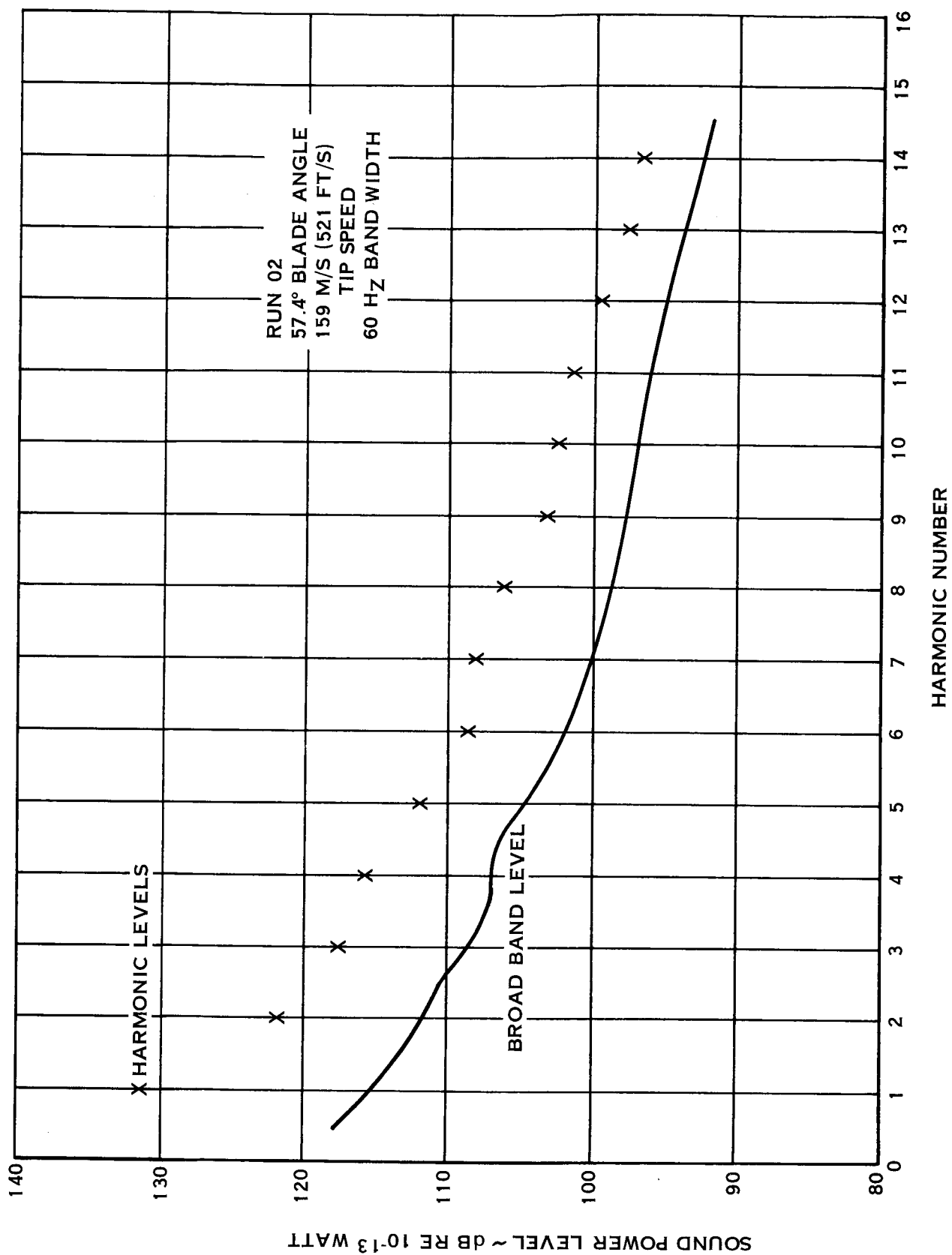
60 HERTZ BAND WIDTH  
512 ENSEMBLES  
TEST CONDITION NUMBER: 28

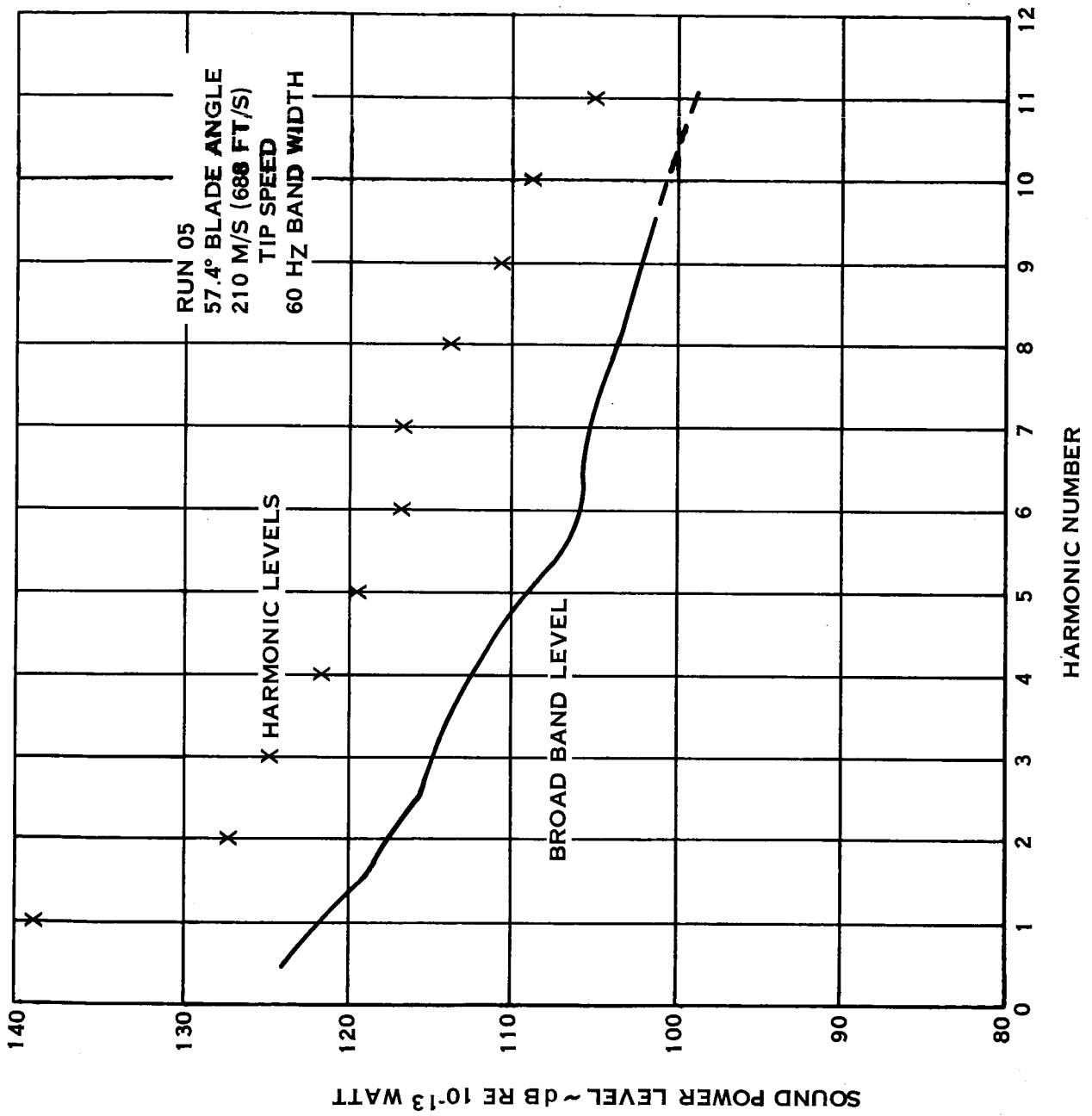
229/230  
BLADE ANGLE: 52.6 DEGREES  
TIP SPEED: 243 M/SEC (797 FT/SEC)  
MICROPHONE LOCATION: 150 DEGREES AZIMUTH, 7.62 M (25 FT)

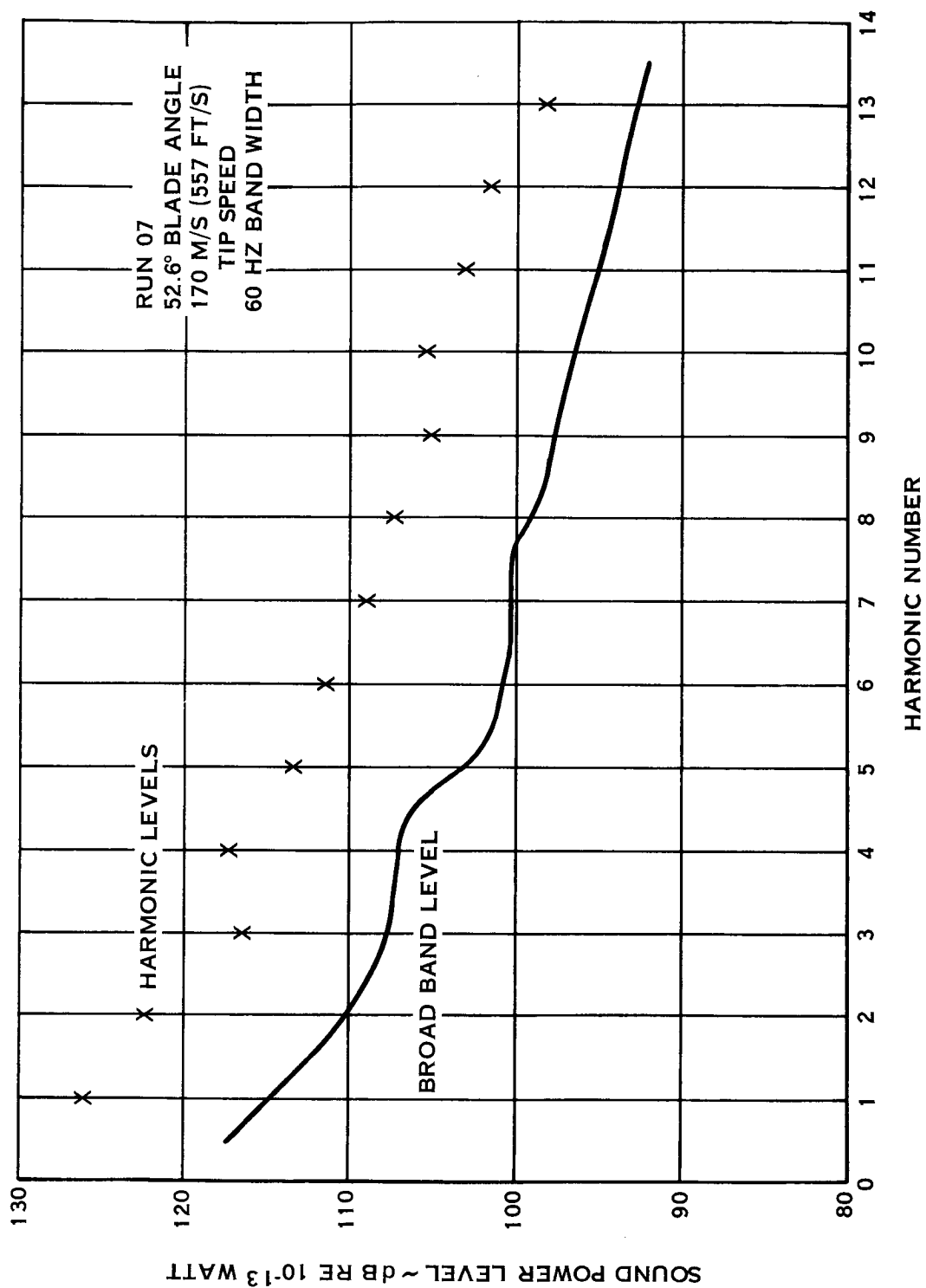
## APPENDIX D

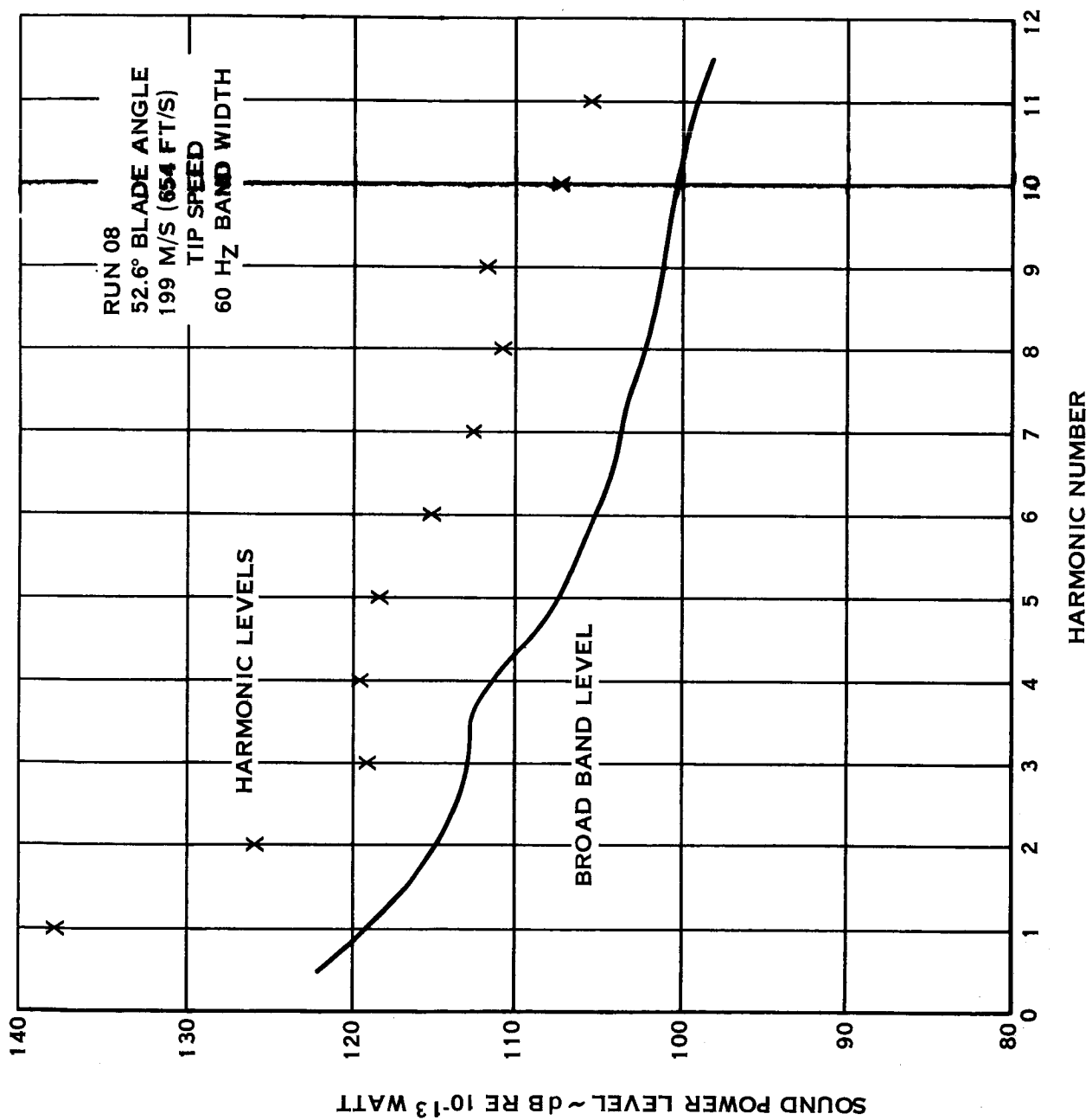
### NARROW BAND SOUND POWER LEVEL DATA

The narrow band SPL data presented in Appendix C was used to calculate the PWL of the harmonic (i.e., at multiples of blade passing frequency) and 1/2 harmonic (i.e., the broadband noise in between harmonics) noise for the fan. These are presented in this appendix for all the conditions analyzed in the program. Note that the broadband levels are based on an analyzer bandwidth of 60 Hz.

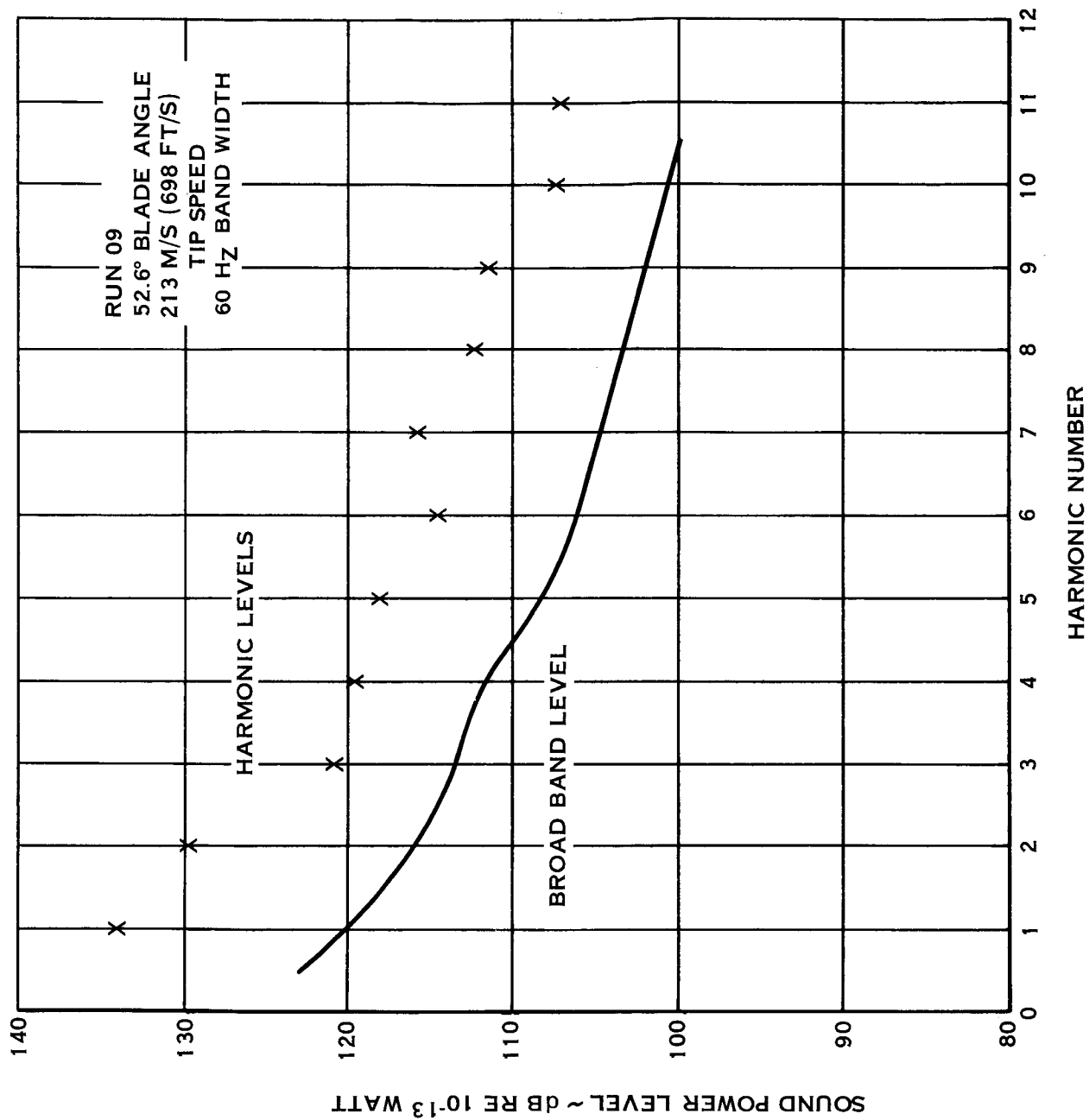


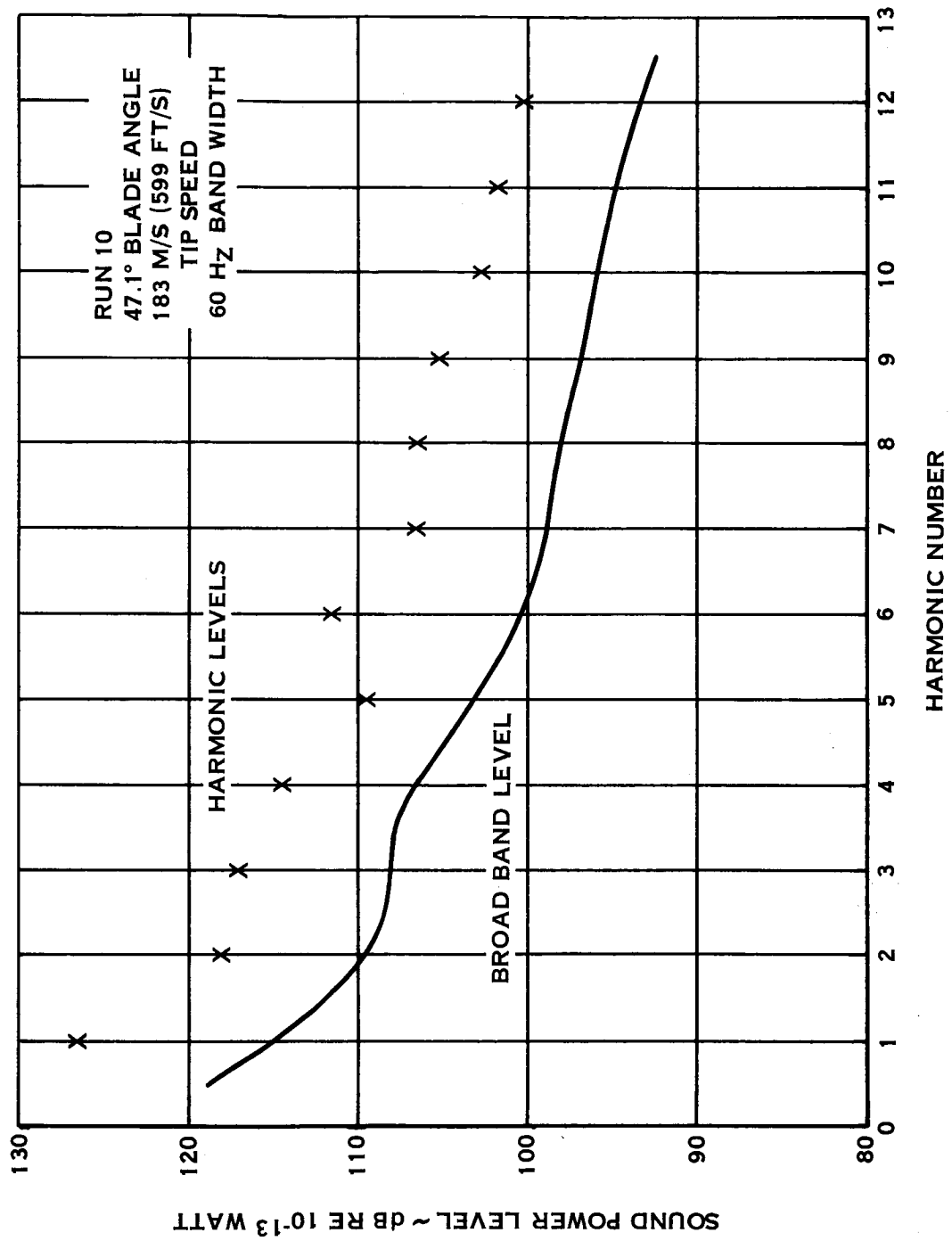


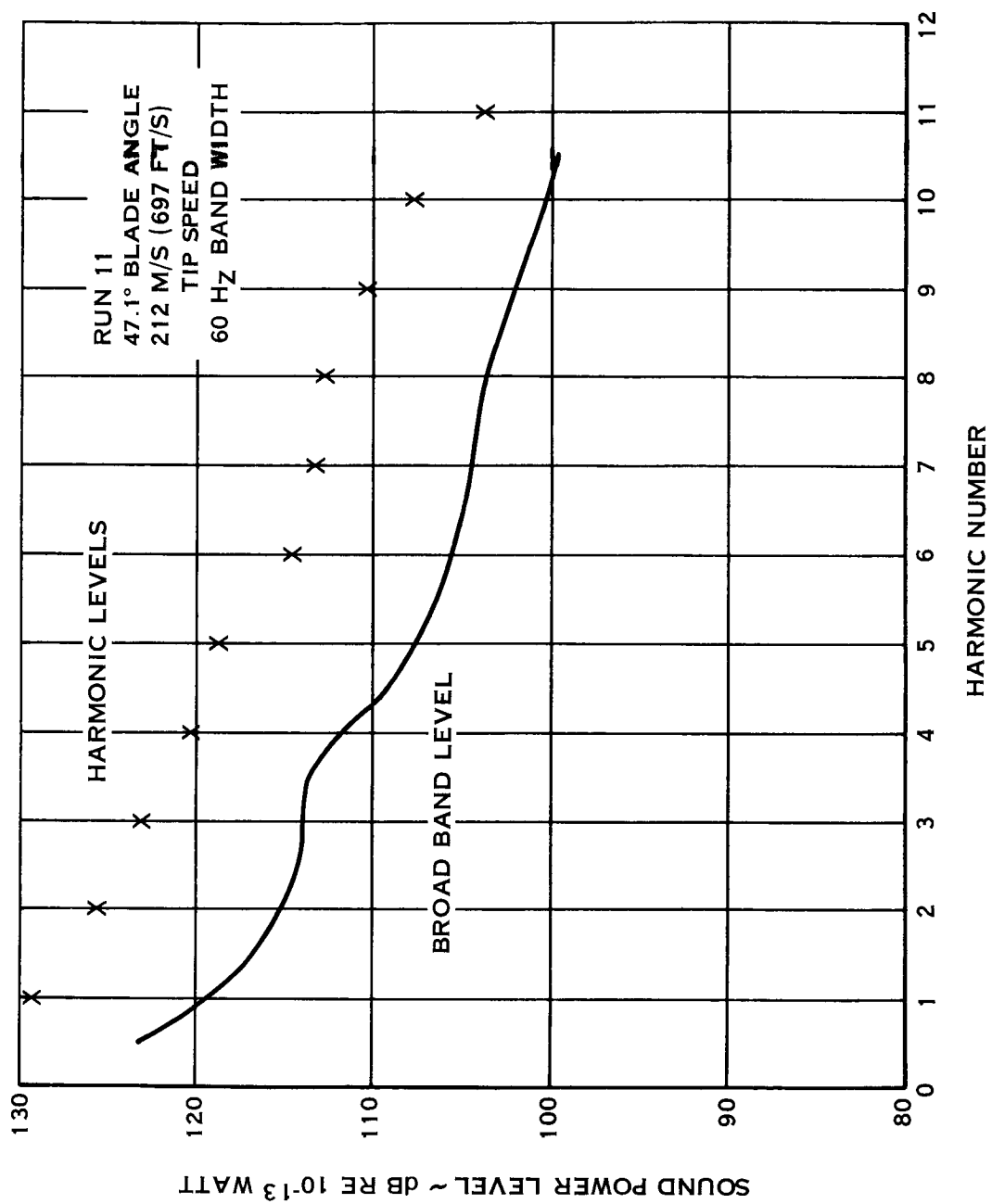


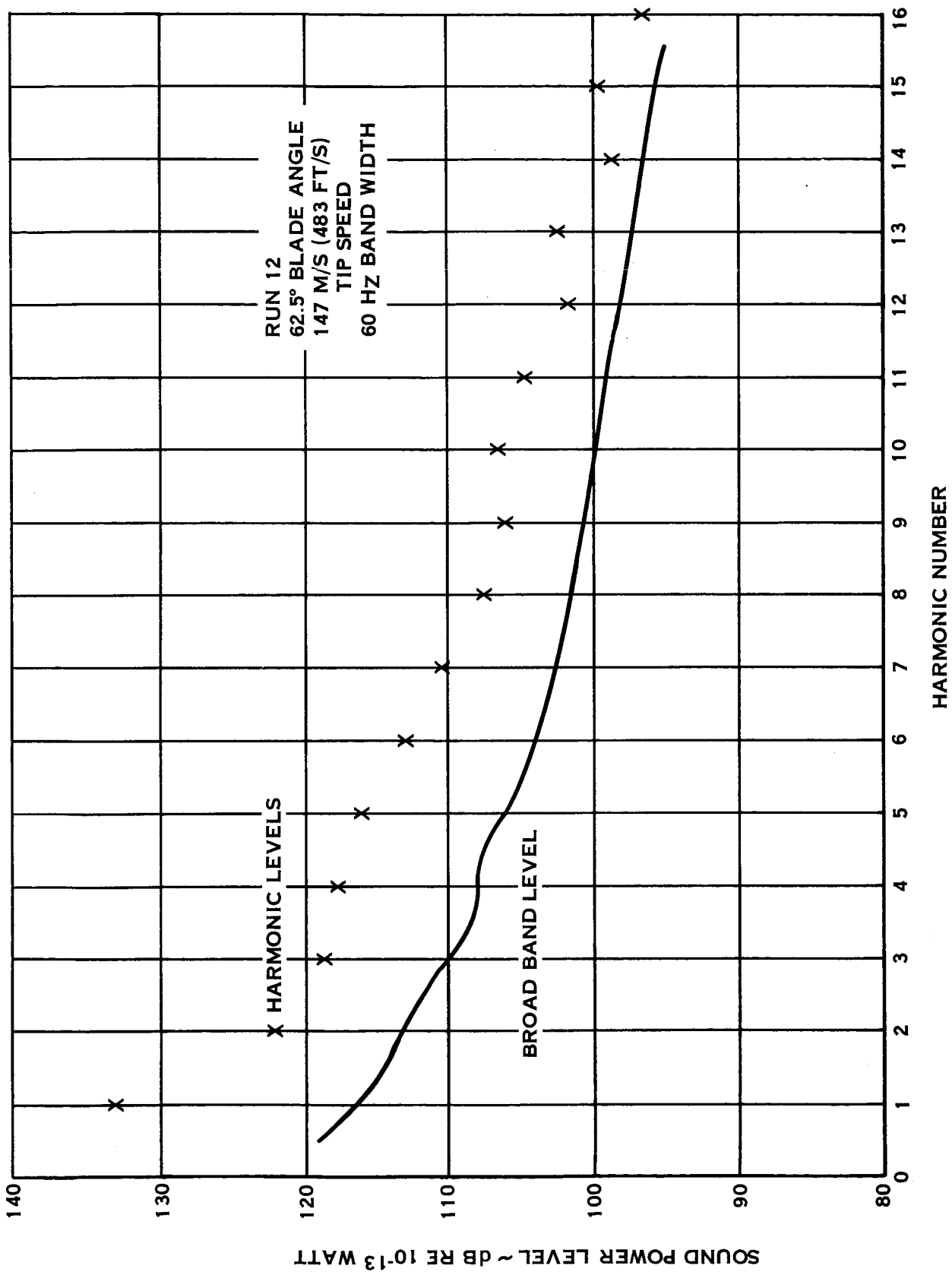


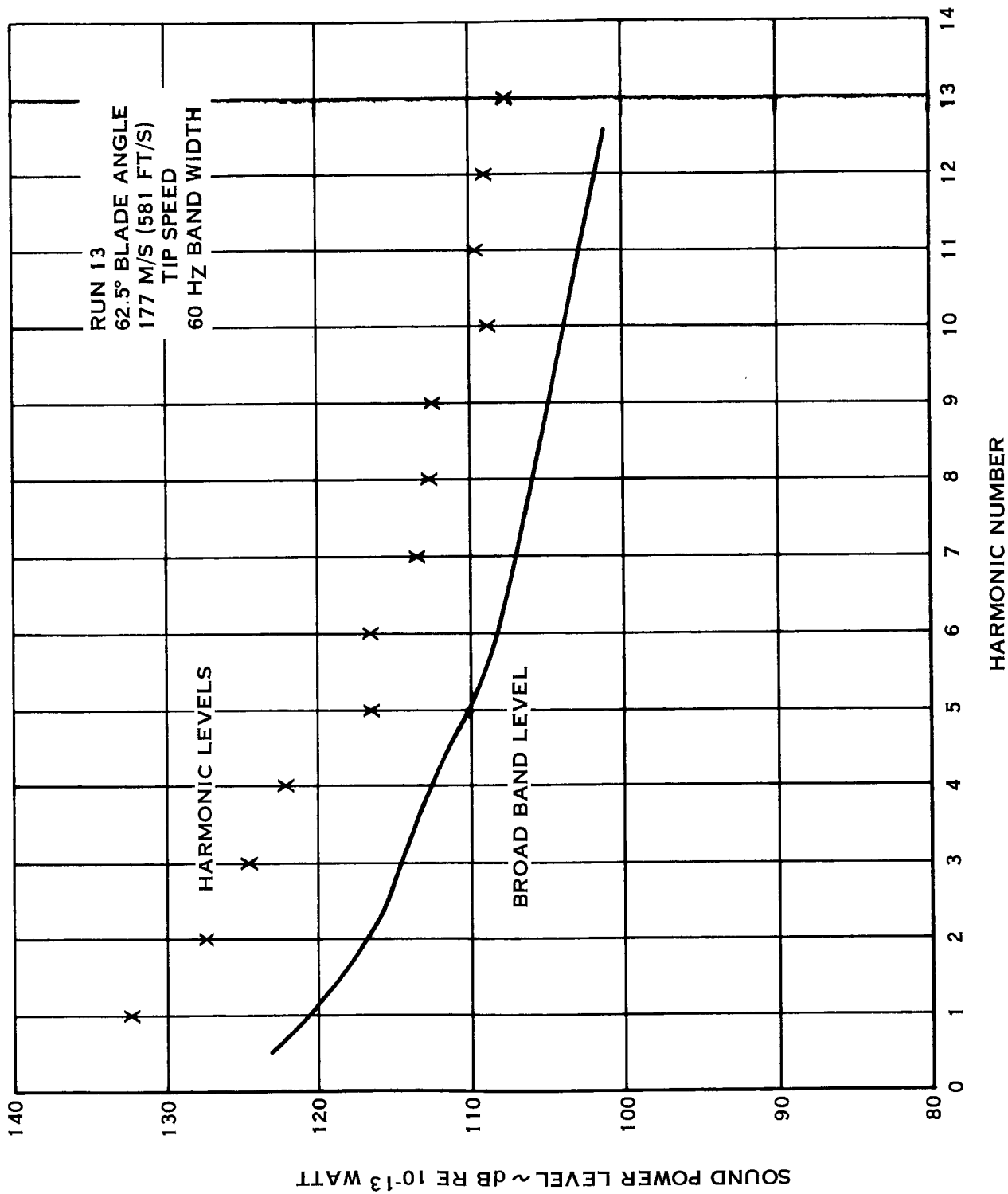


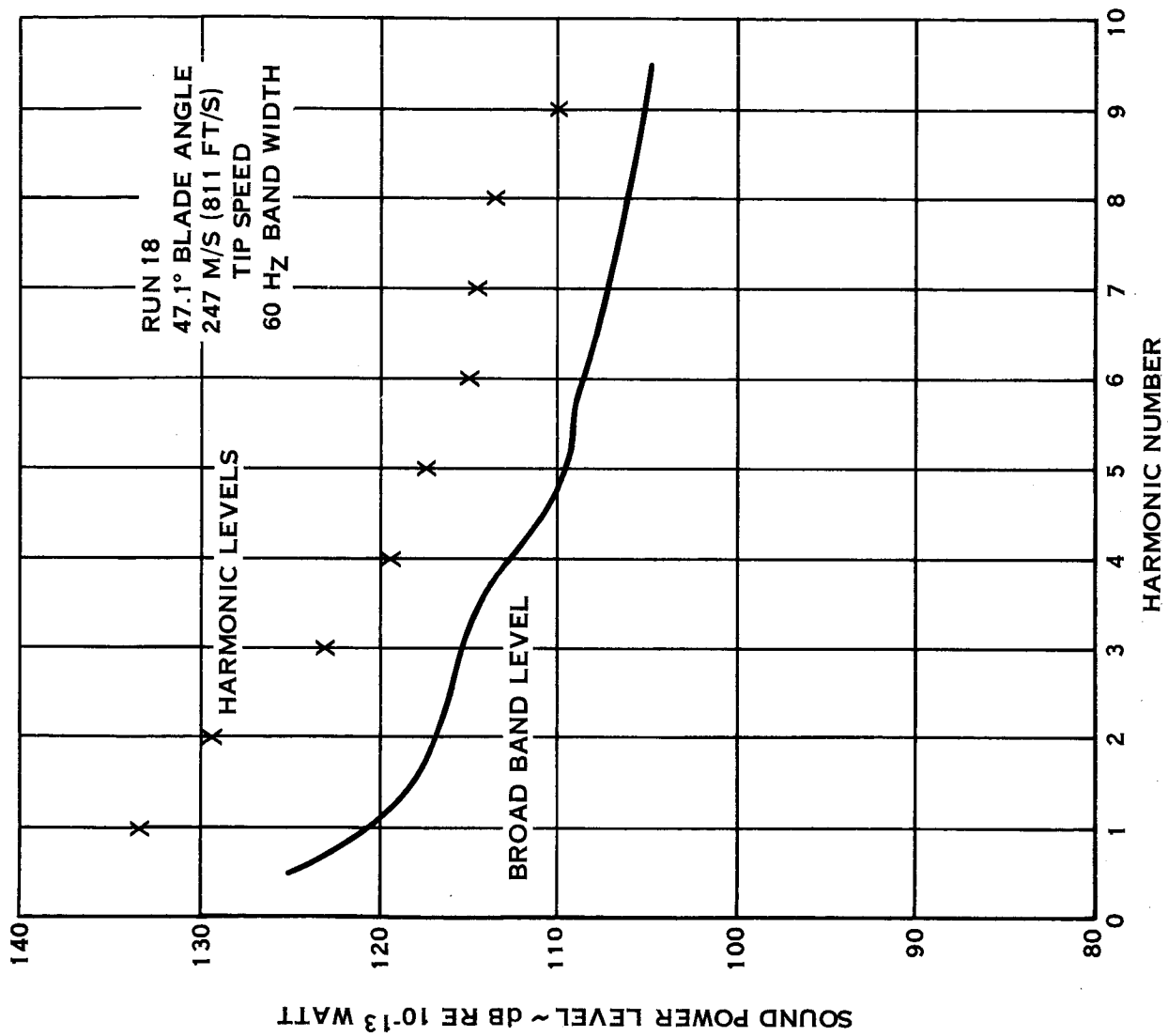


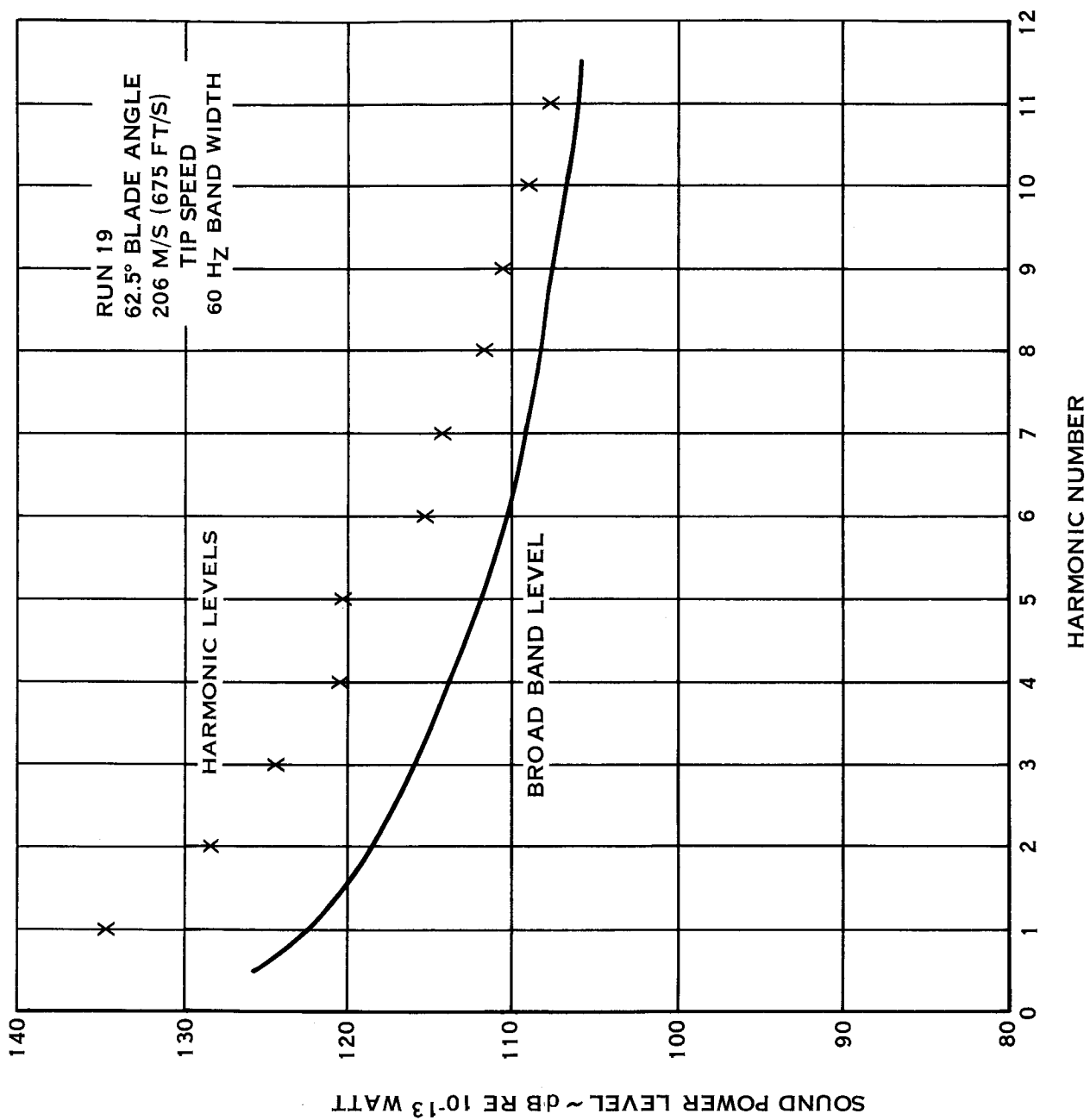


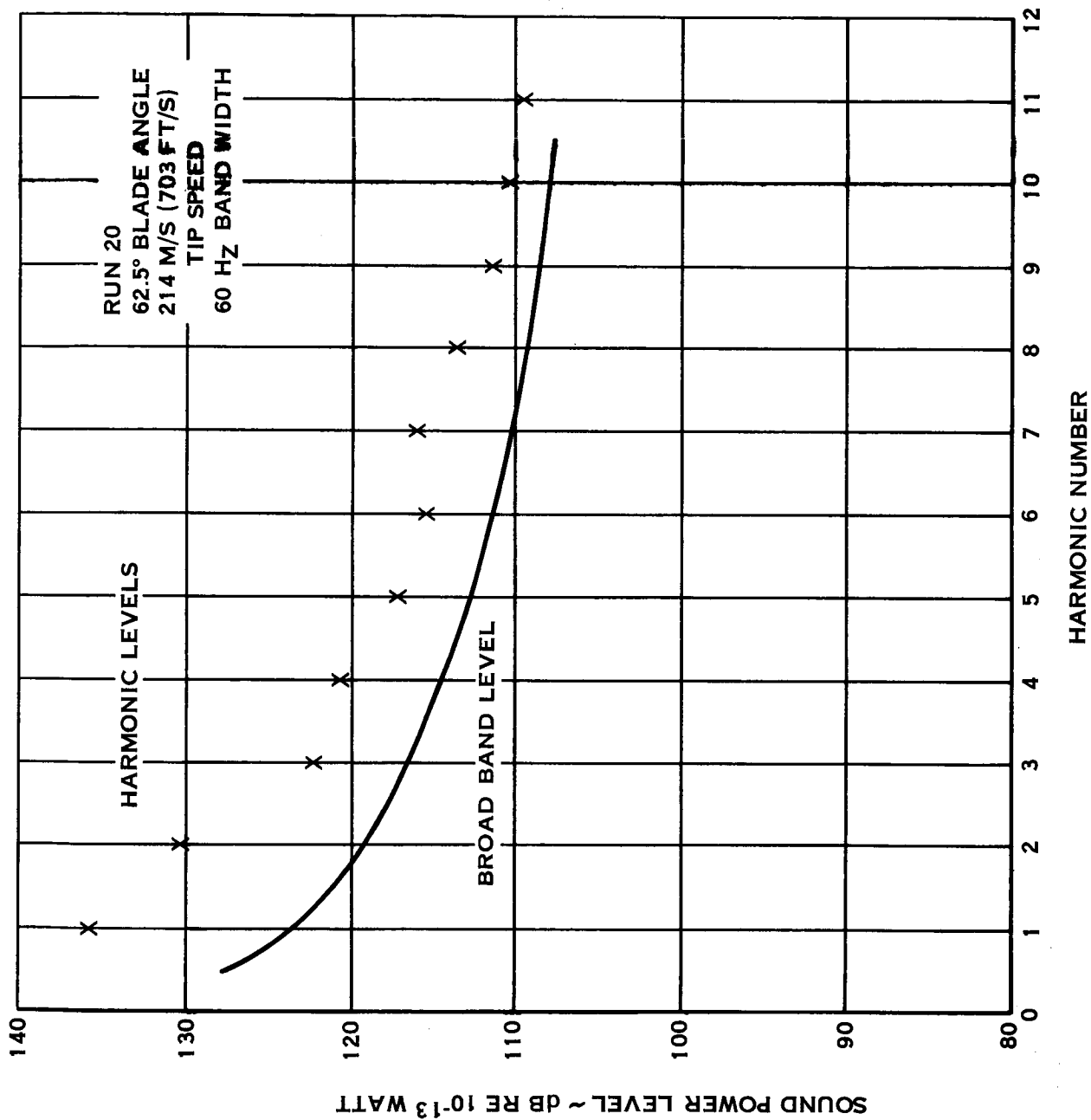




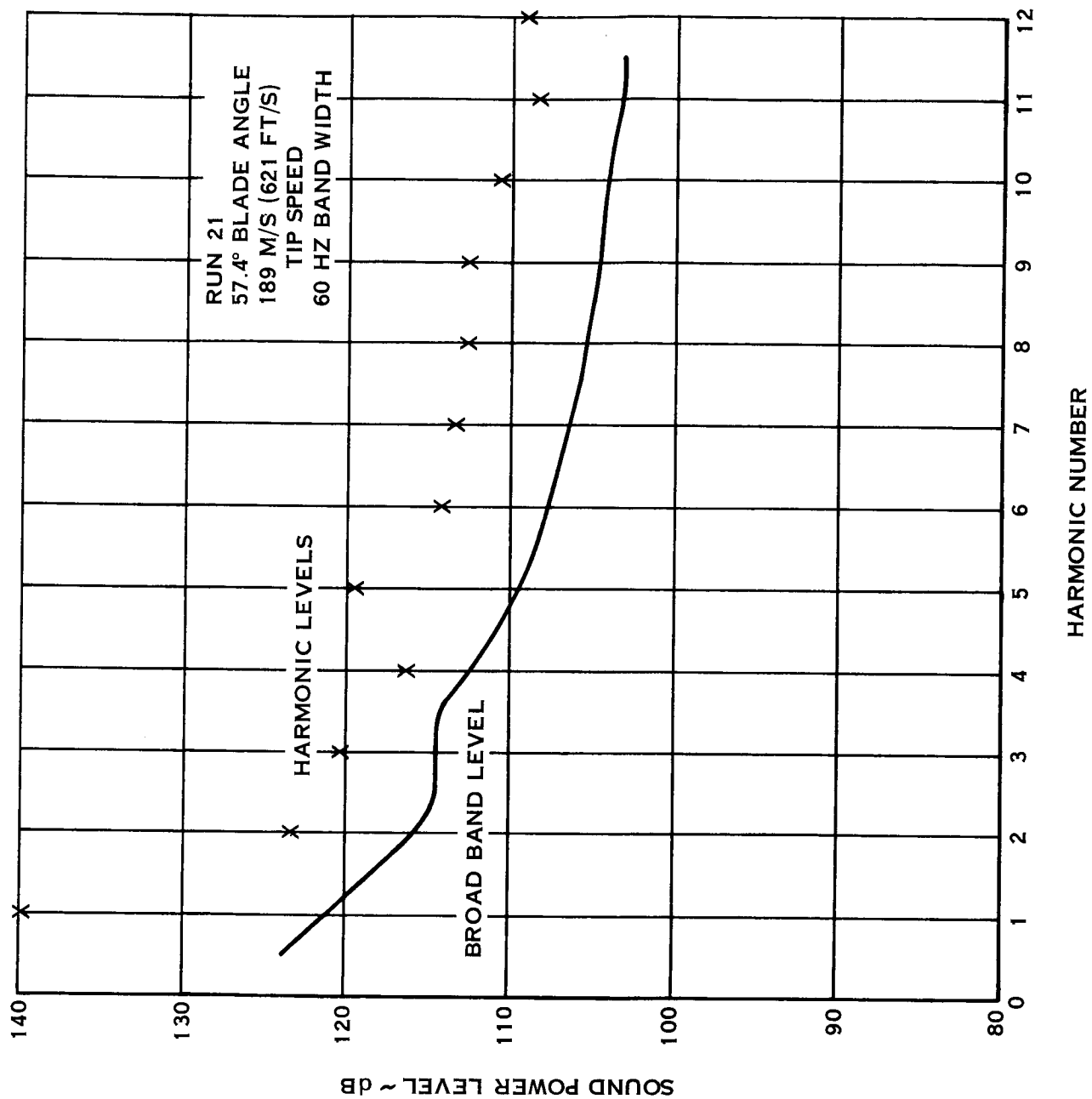


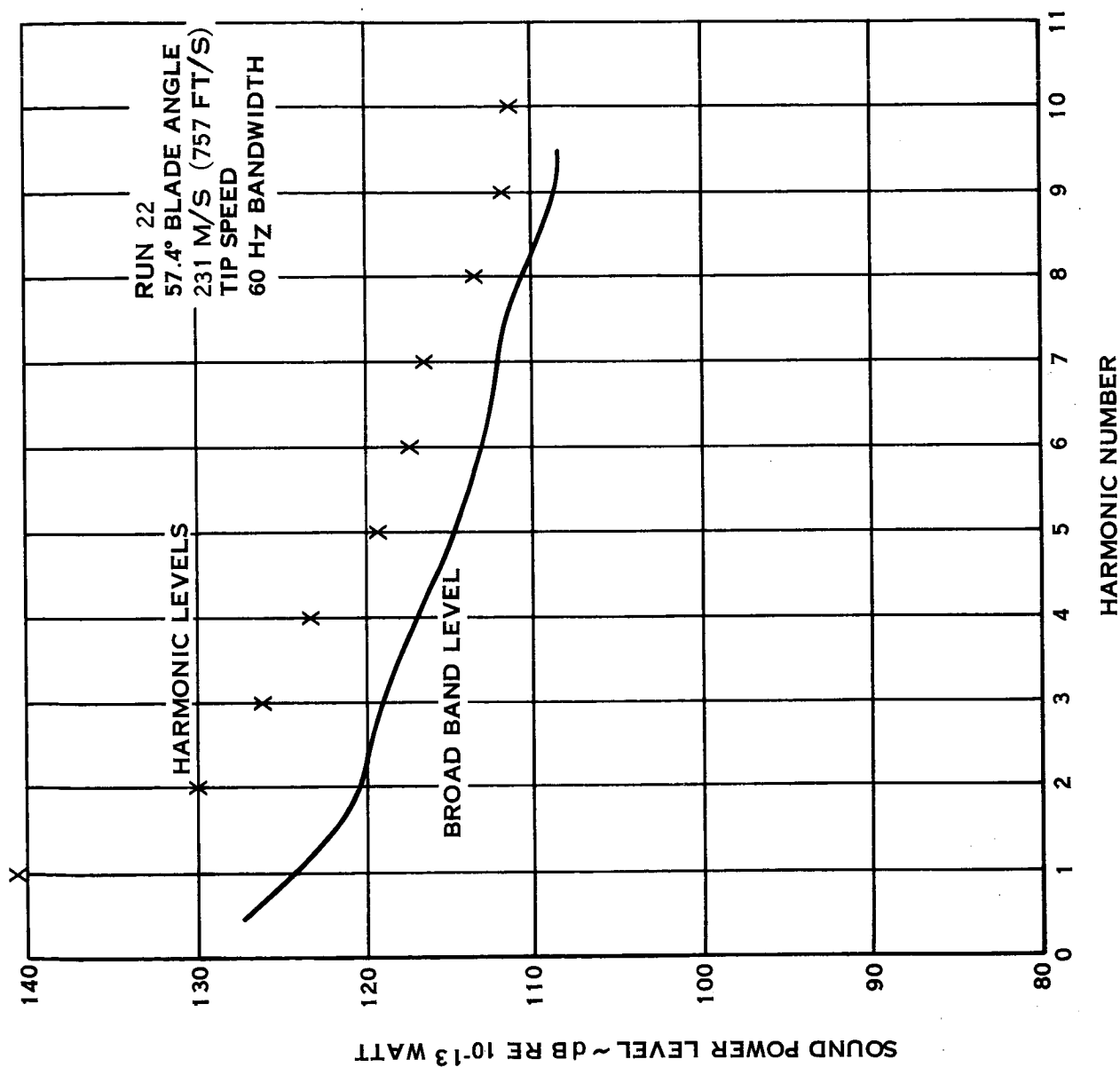


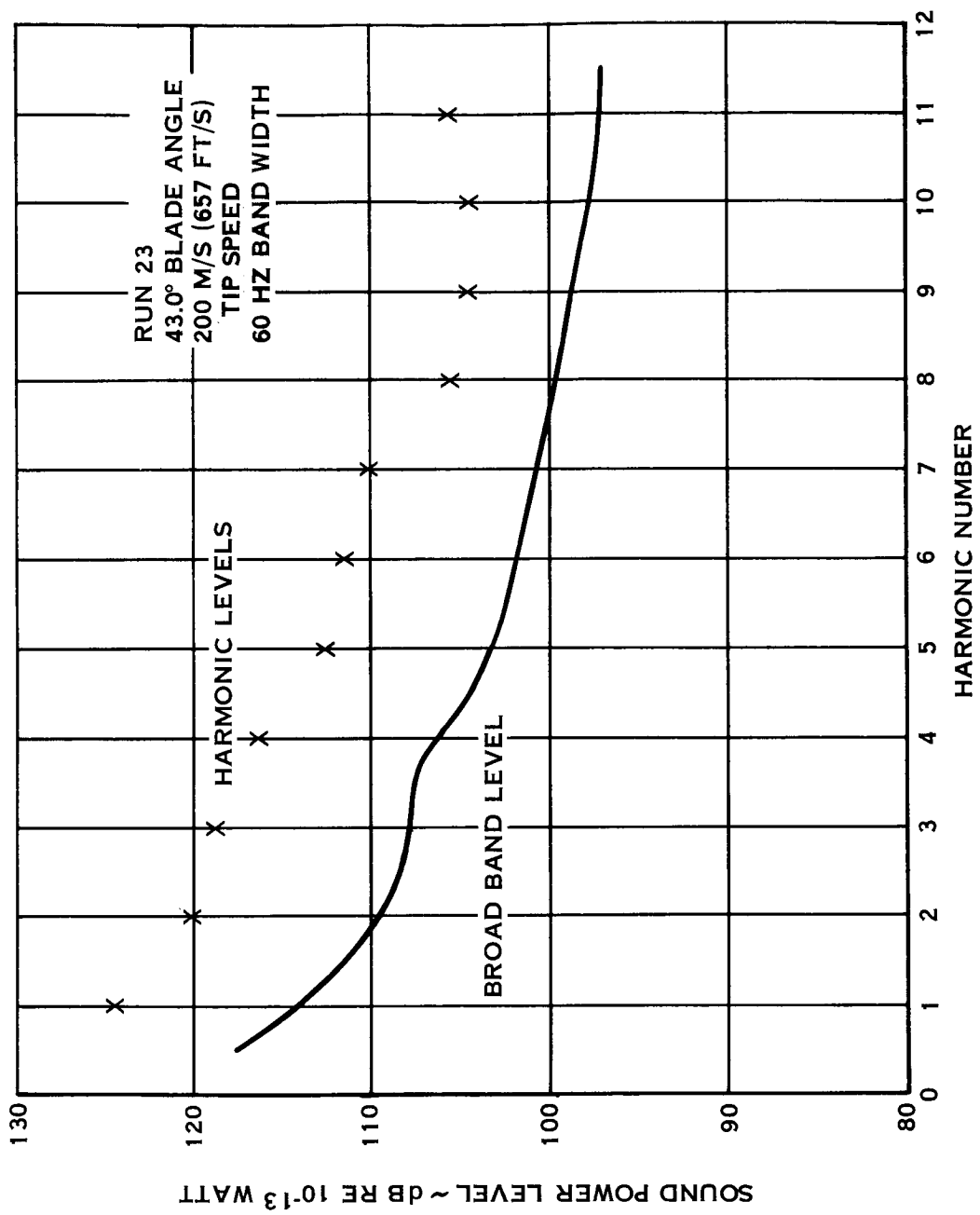


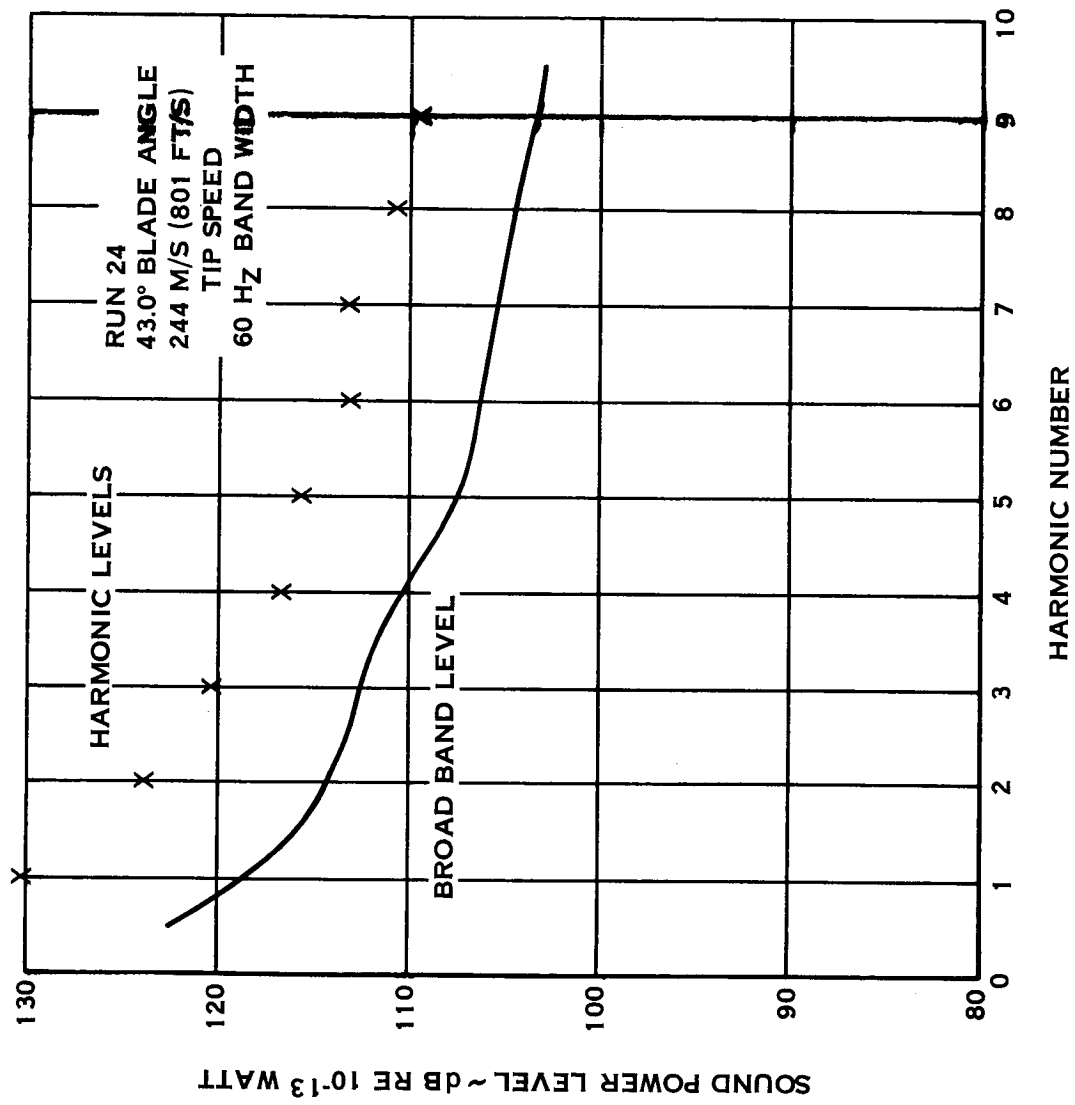


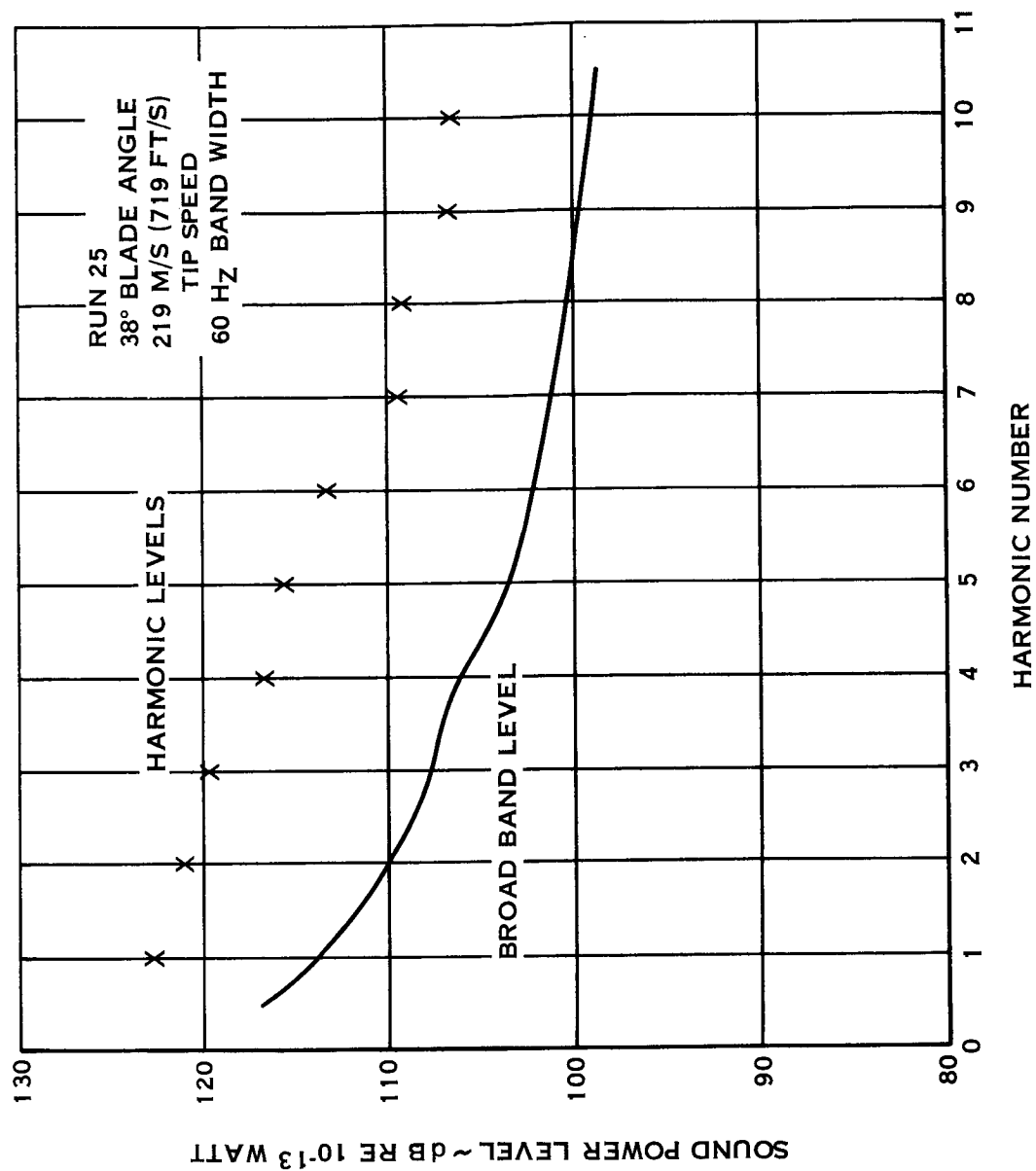


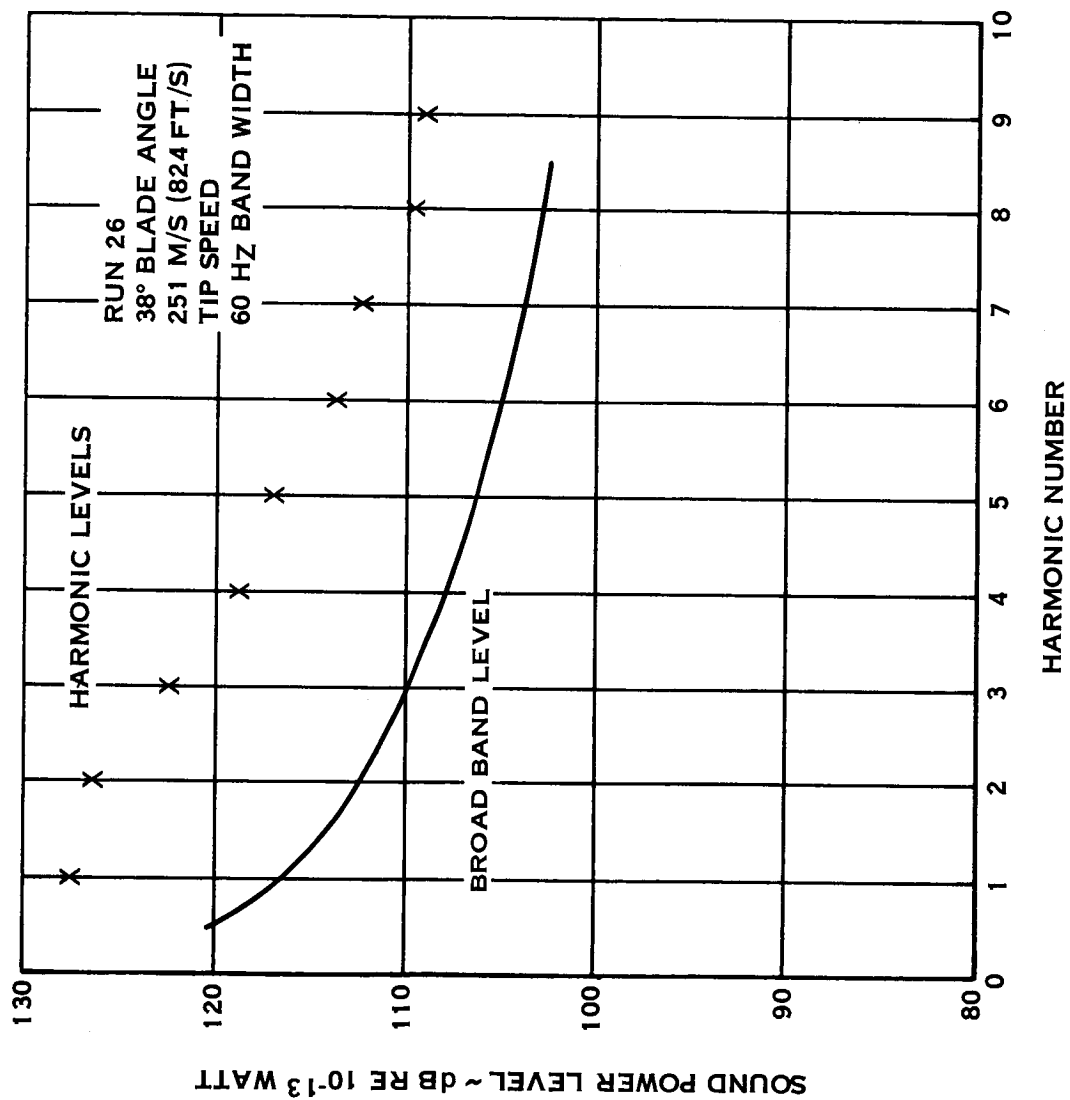


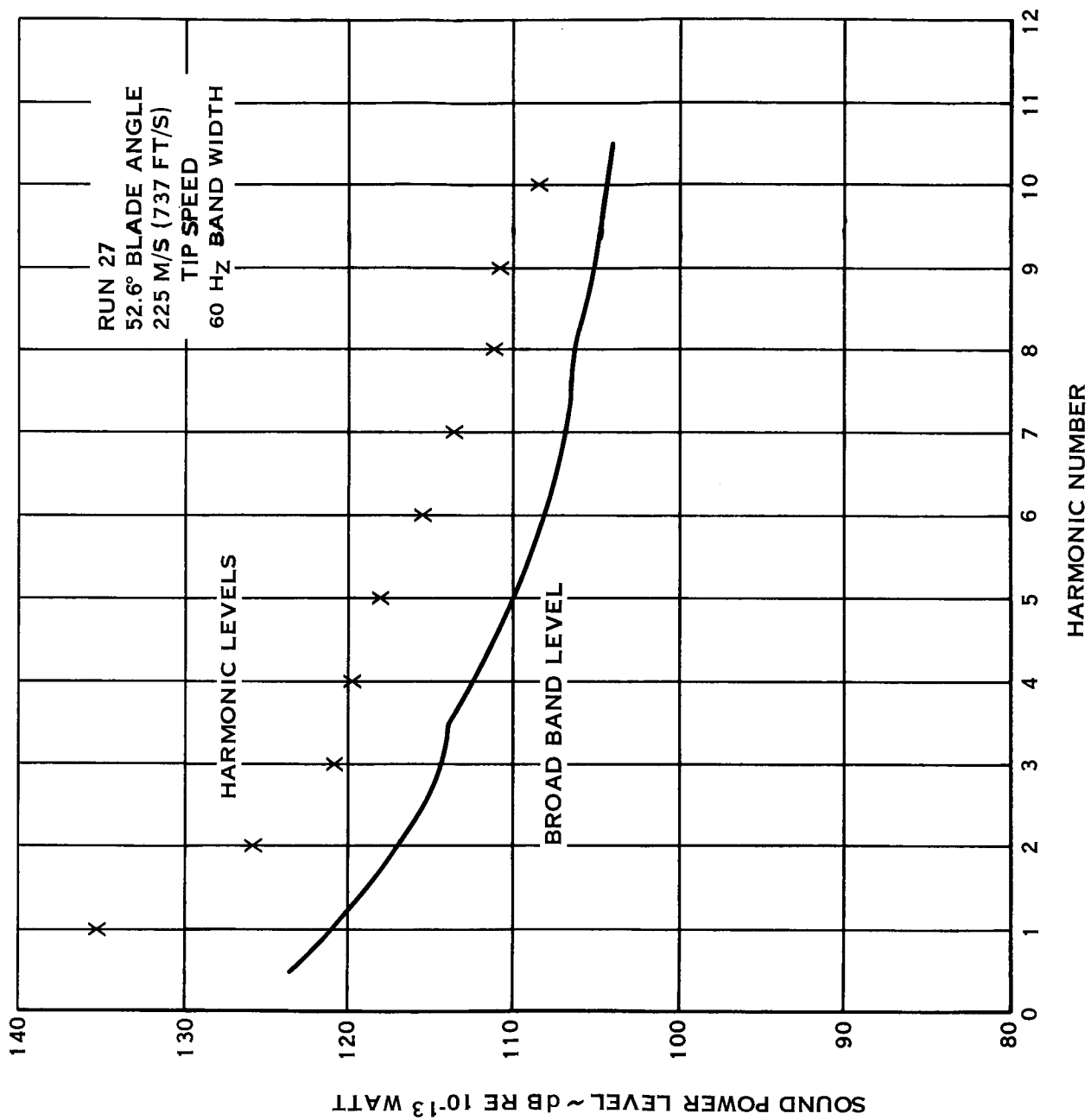


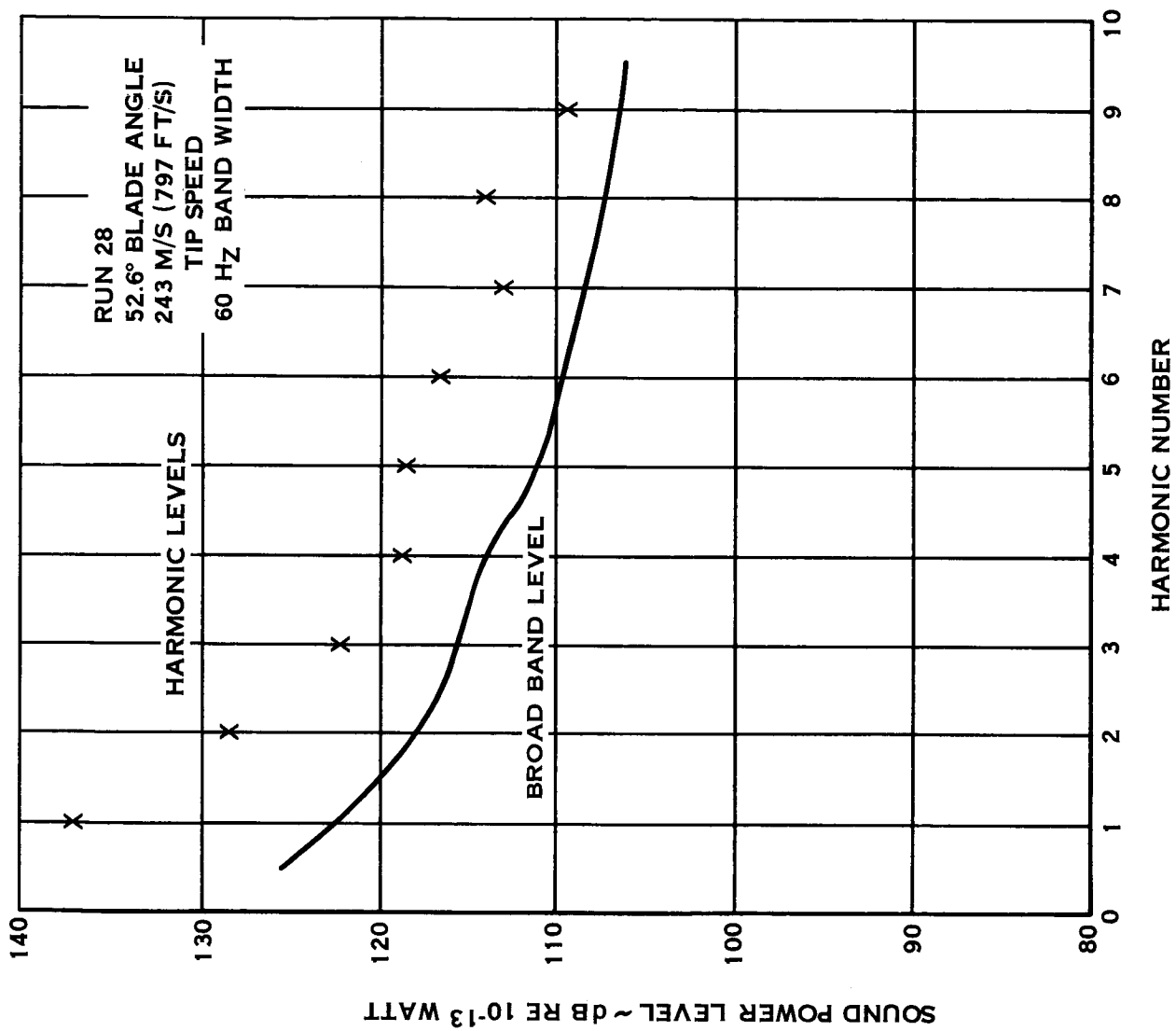














## APPENDIX E

### BLADE WAKE DATA

This section contains the signal-enhanced plots of the measured rotor blade wakes. Table E-I summarizes the data contained herein. The figures show the two velocity components which were measured plus the resultant velocity and the air angle for both the stationary (stator) and the rotor coordinate systems for the 20 measurements made in this test program.

TABLE E-I





SUMMARY OF FLOW CONDITIONS, STATOR SPAN LOCATIONS,  
AND ROTOR BLADES FOR WHICH FAST RESPONSE DATA IS PRESENTED

Flow Condition	Rotor Speed	Blade Angle	Pressure Ratio	Span Location	No. of Blades	Figures
I	10080	53	1.14	5	12	E-1
				15	3	E-2
				25	↓	E-3
				35	12	E-4
				45	3	E-5
				55	8	E-6
				65	3	E-7
				75	↓	E-8
				85	↓	E-9
				95	12	E-10
II	6620	58	1.07	15	3	E-11
				35	↓	E-12
				55	↓	E-13
				75	↓	E-14
				95	↓	E-15
III	7650	48	1.07	35	3	E-16
				55	↓	E-17
				75	↓	E-18
				85	↓	E-19
				95	↓	E-20

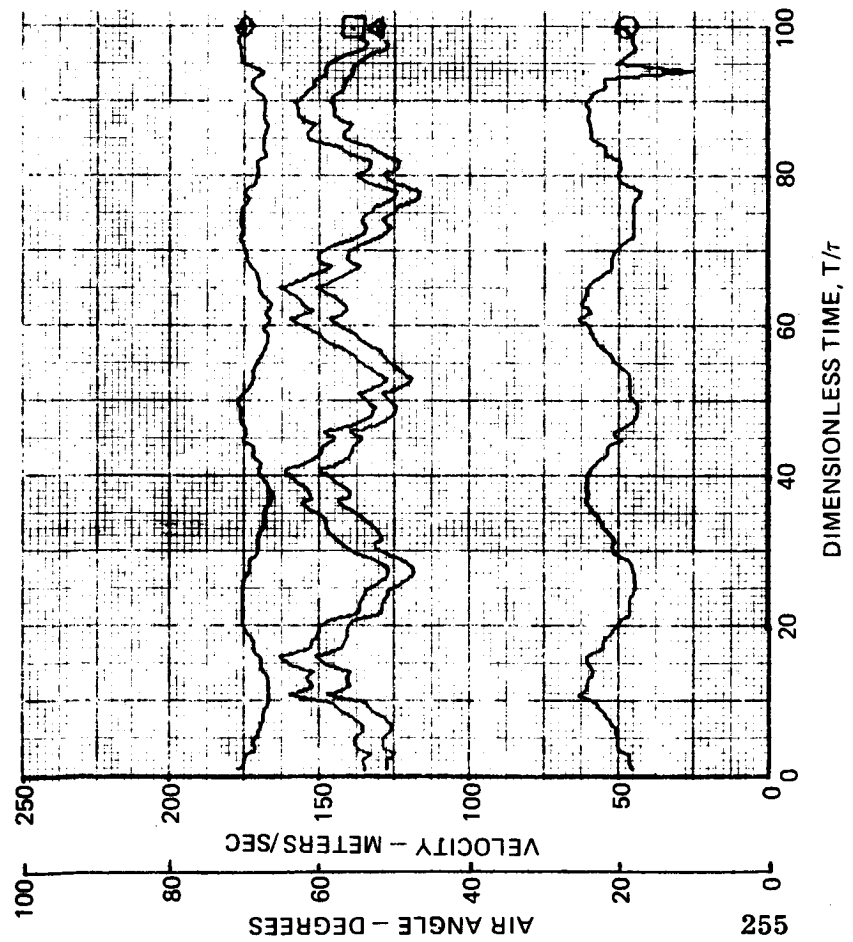
FIGURE E-1A. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 5 PERCENT FROM ROOT

$\tau = 20 \mu \text{ sec}$

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

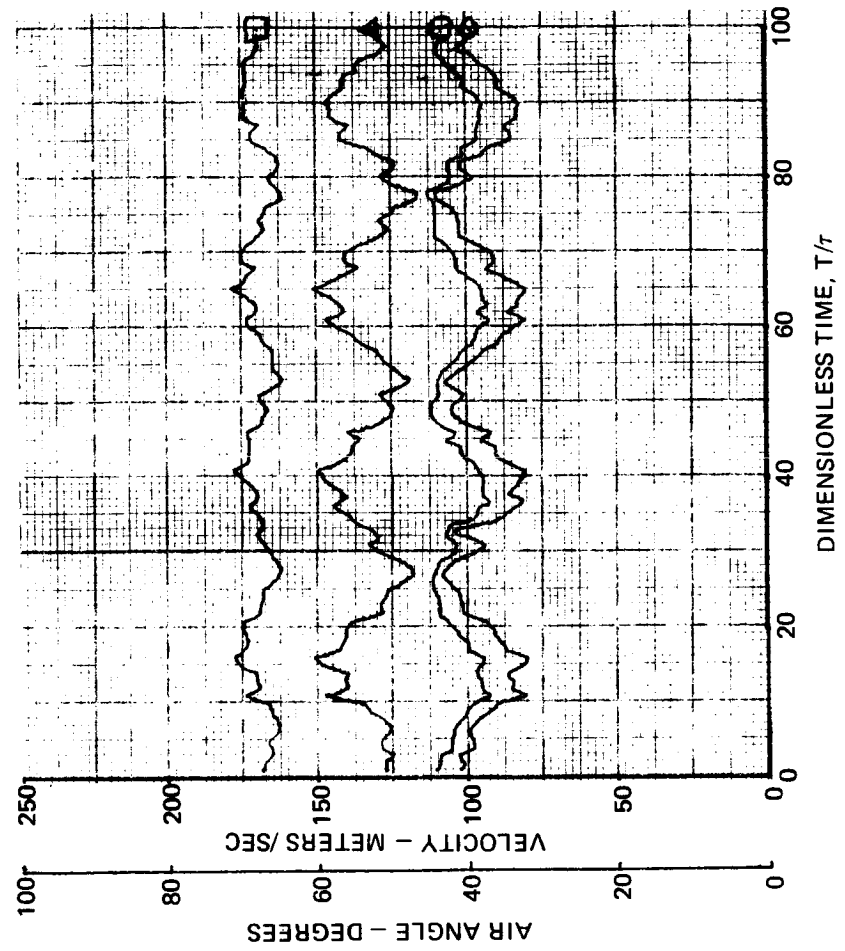
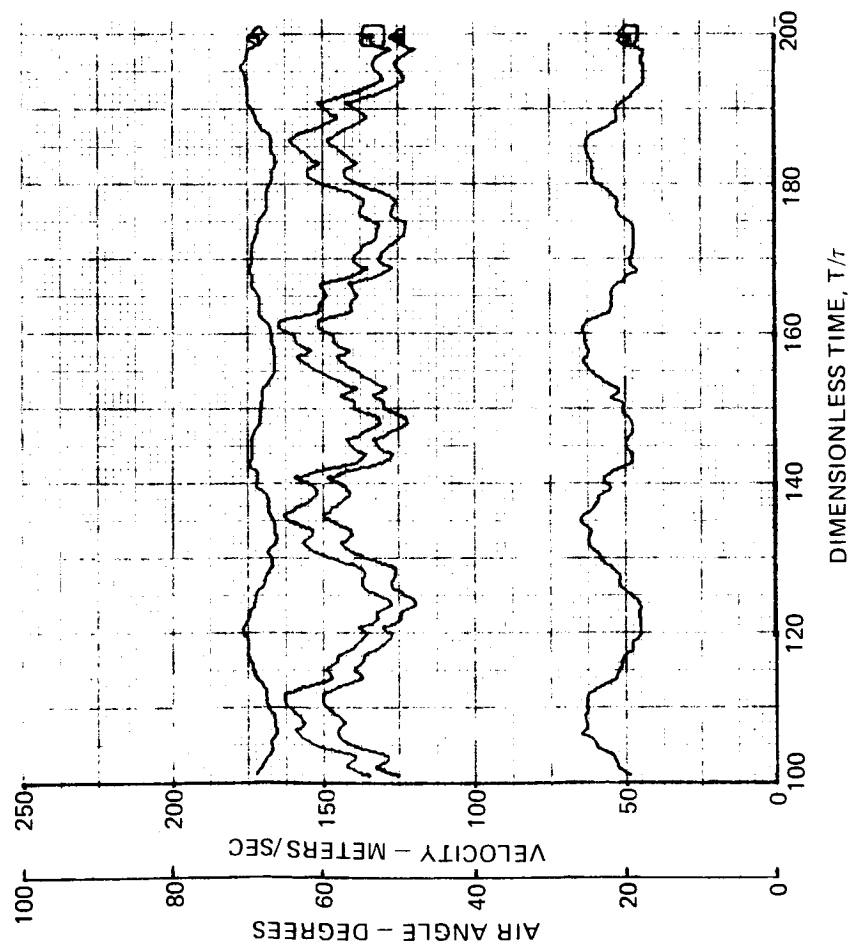


FIGURE E-1B. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 5 PERCENT FROM ROOT

SYMBOL	□	○	△	◇
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

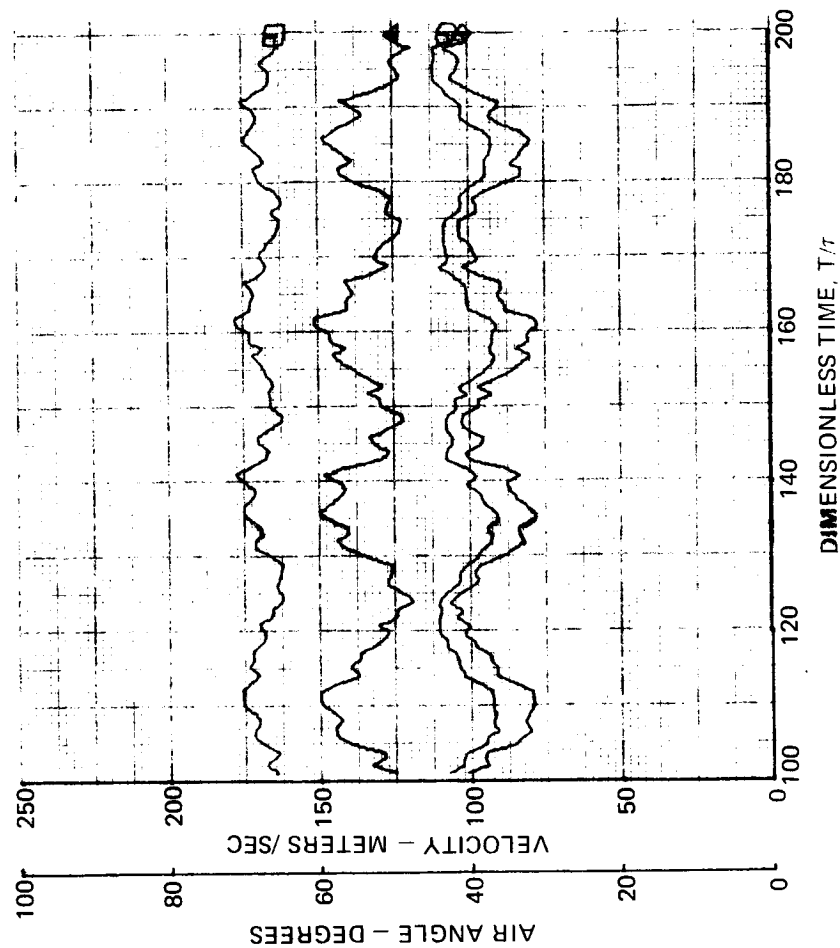






FIGURE E-1C. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION -- 5 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM

b) ROTOR COORDINATE SYSTEM

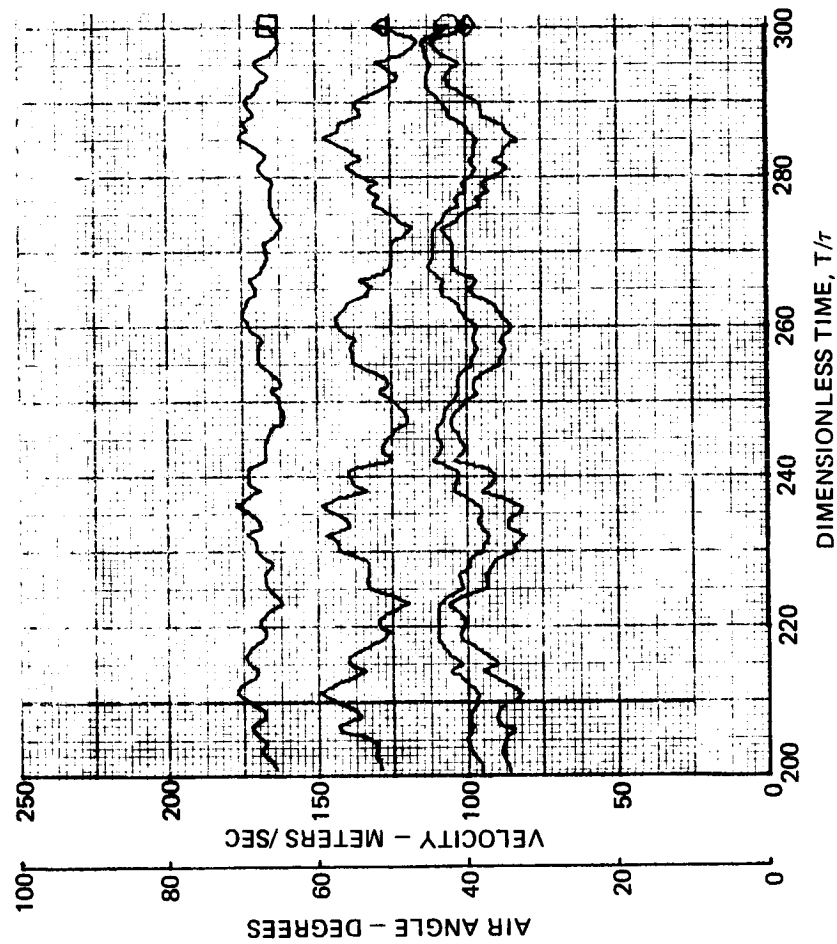
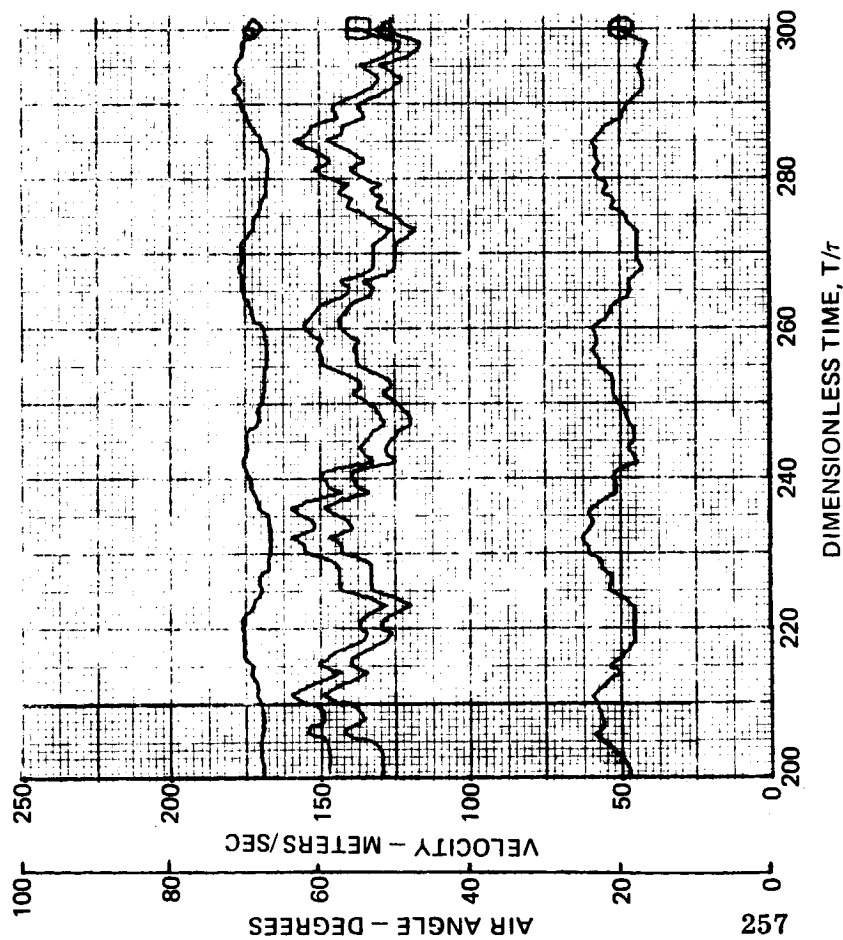






FIGURE E-2. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 15 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM

b) ROTOR COORDINATE SYSTEM

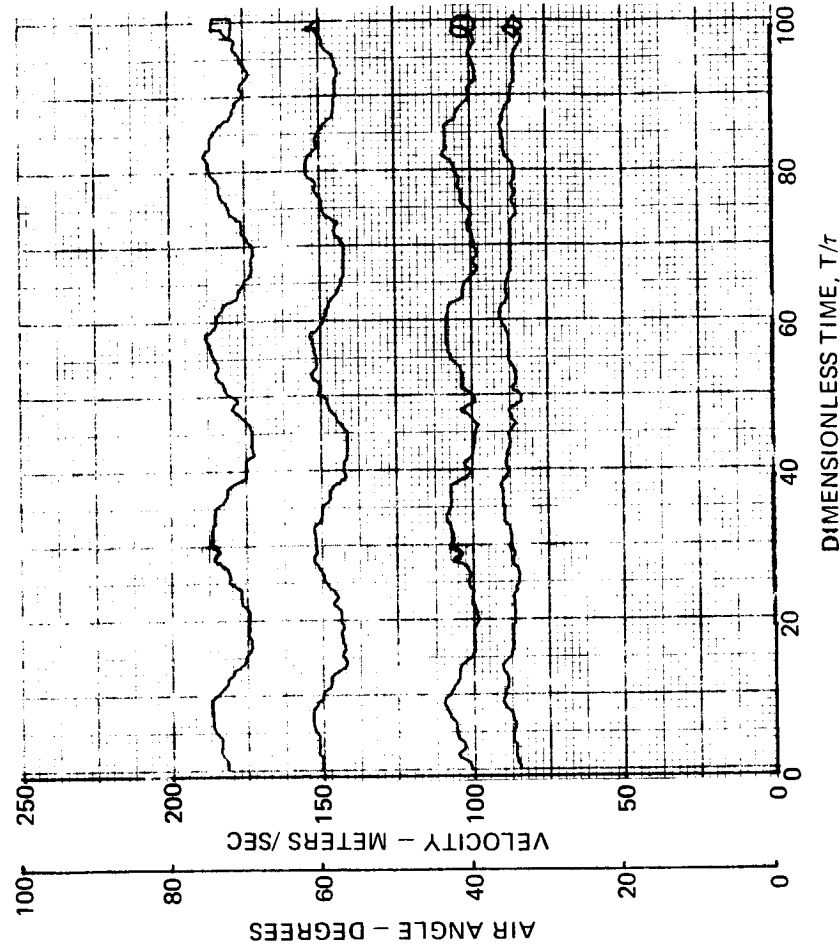
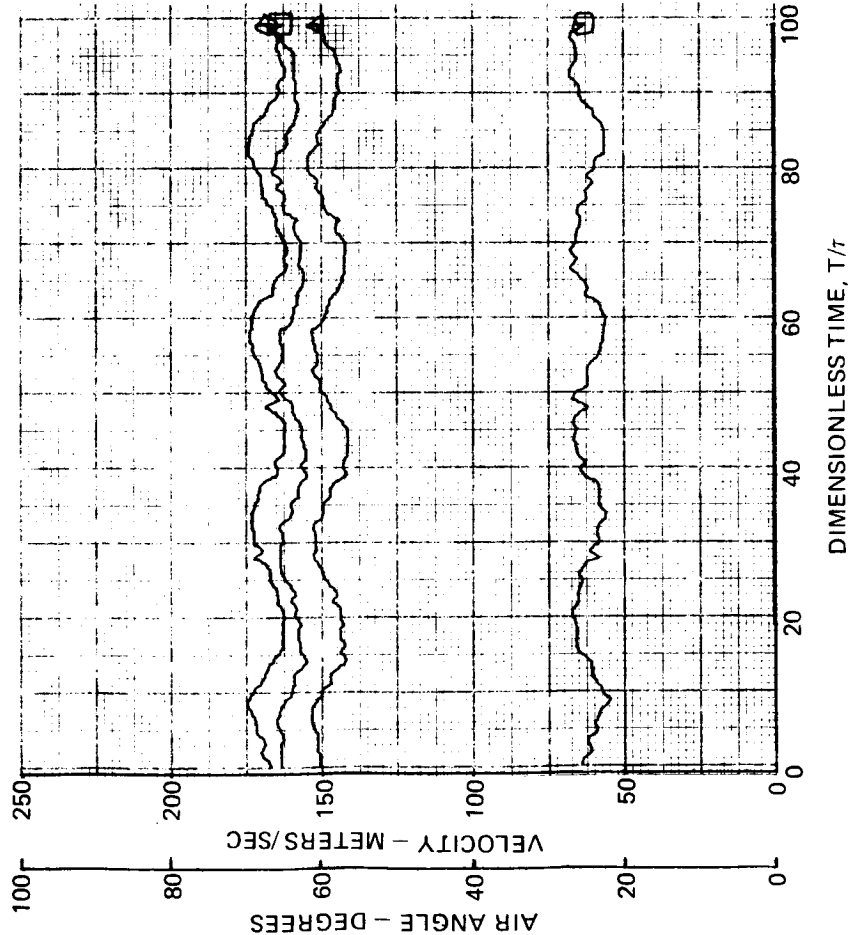






FIGURE E-3. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 25 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM

b) ROTOR COORDINATE SYSTEM

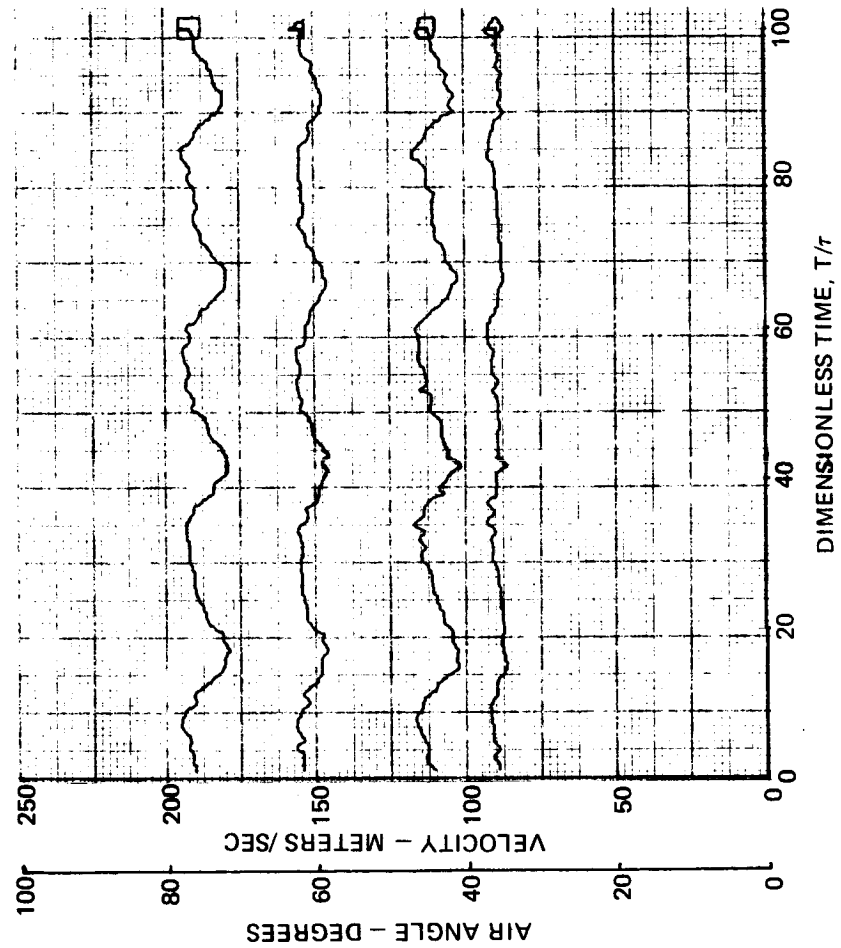
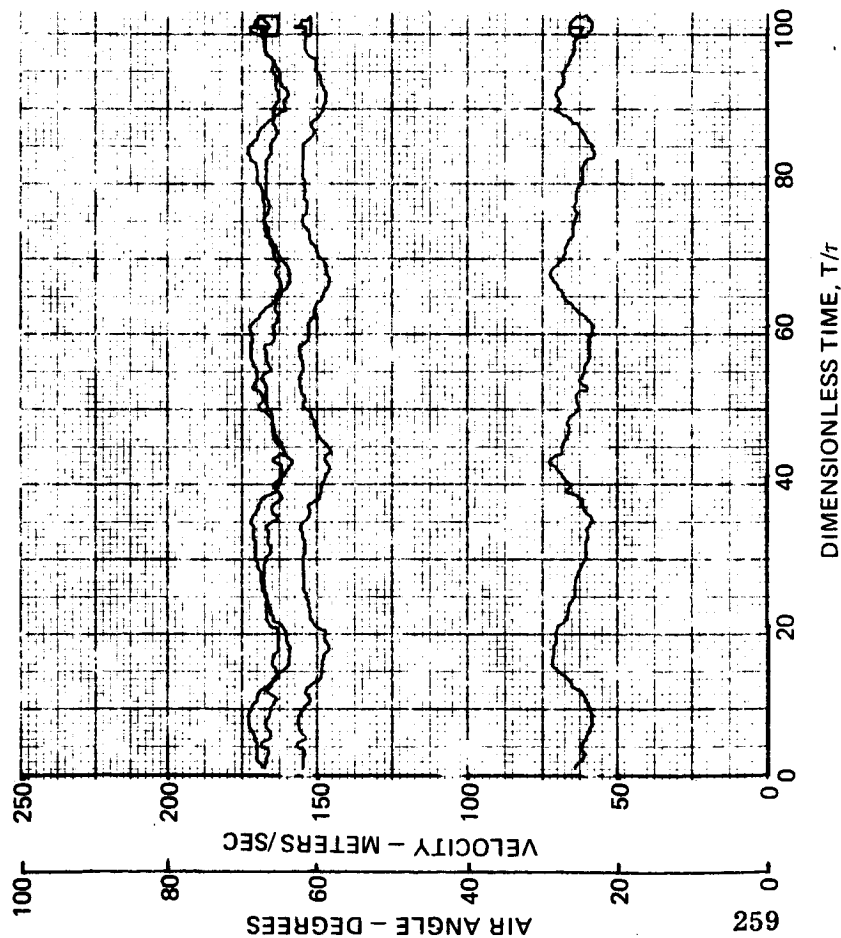






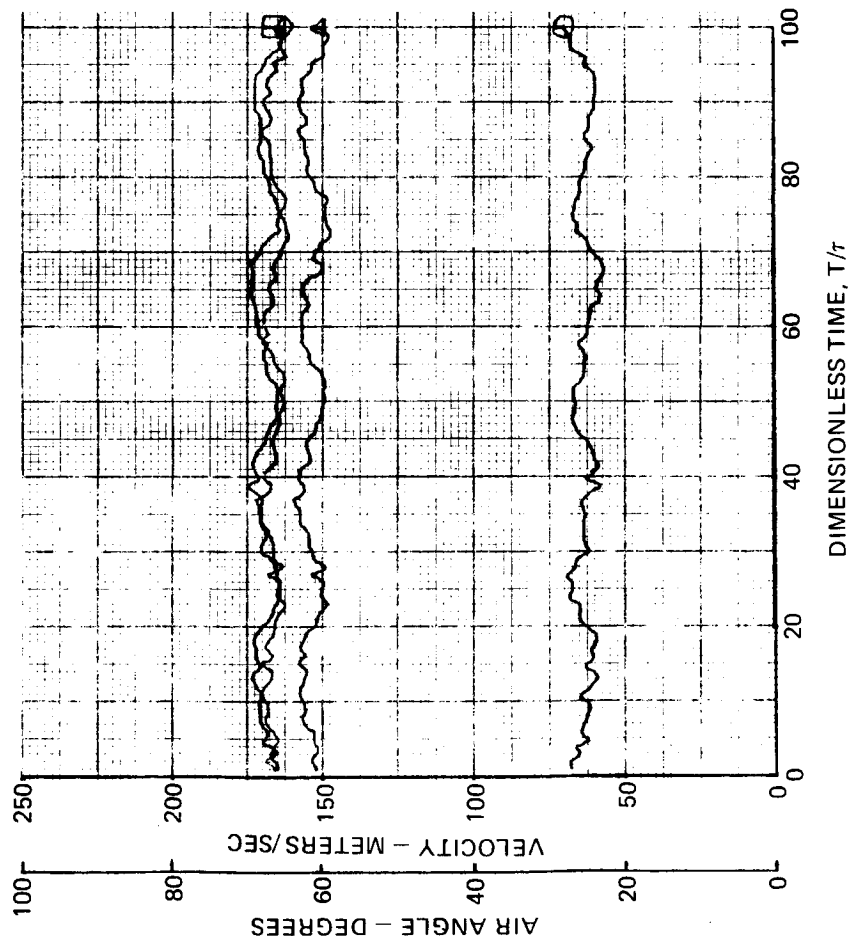
FIGURE E-4A. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 35 PERCENT FROM ROOT

$\tau = 20 \mu \text{ sec}$

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

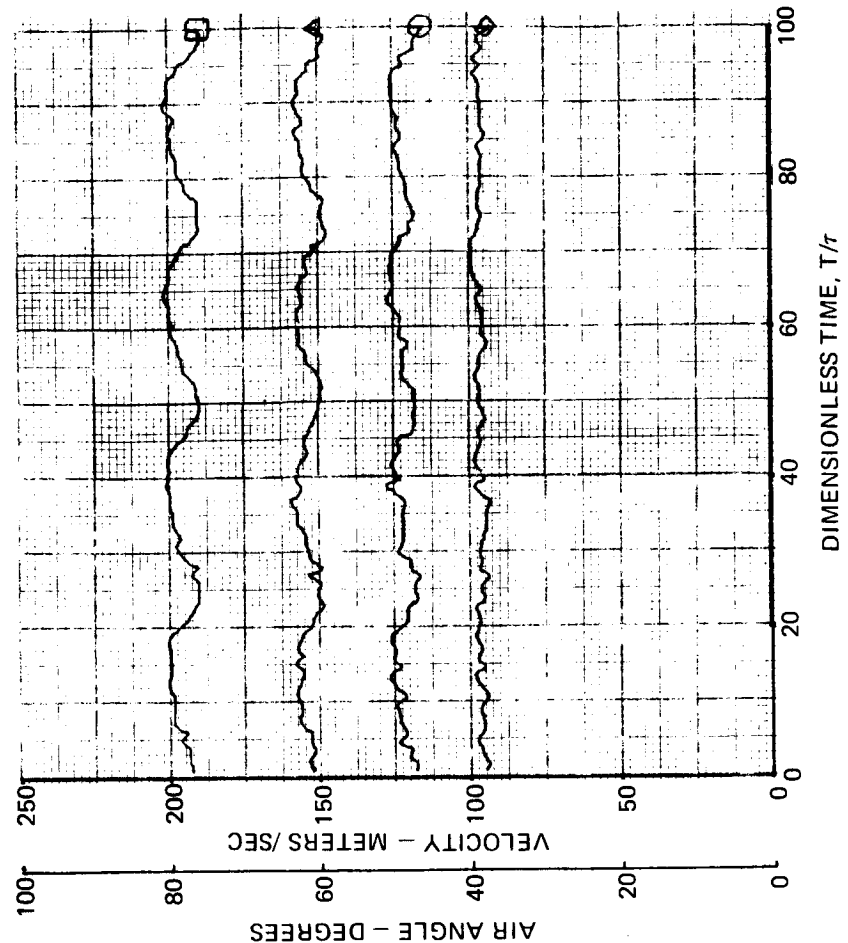




FIGURE E-4B. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 35 PERCENT FROM ROOT

SYMBOL	$\square$	$\circ$	$\Delta$	$\diamond$
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM

b) ROTOR COORDINATE SYSTEM

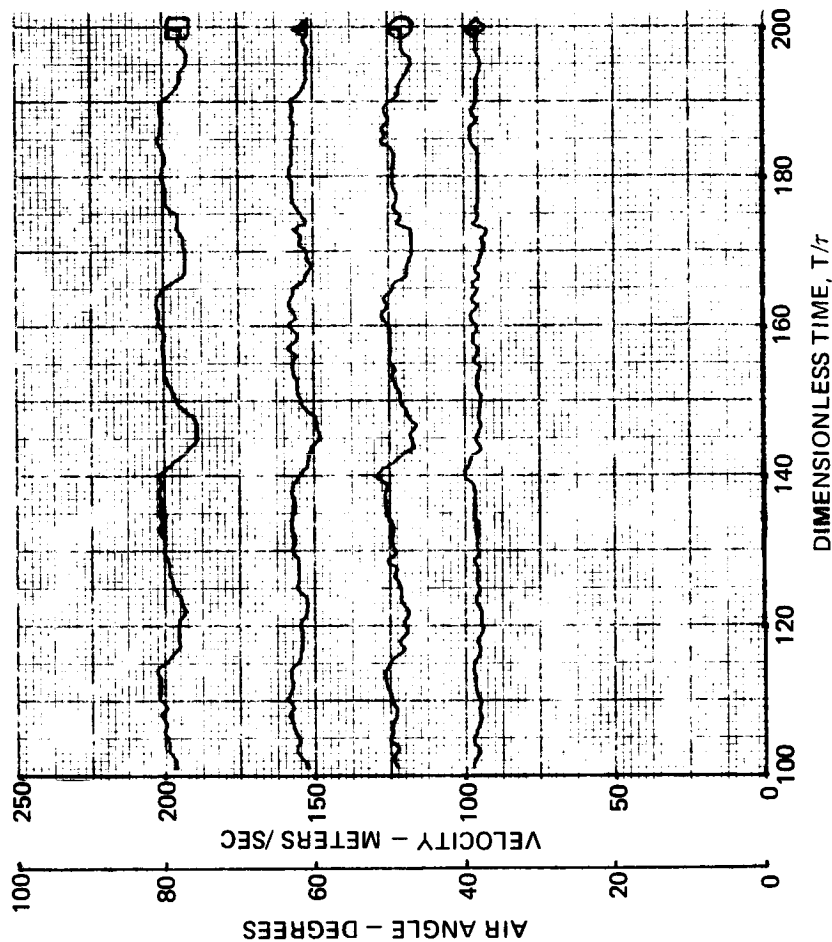
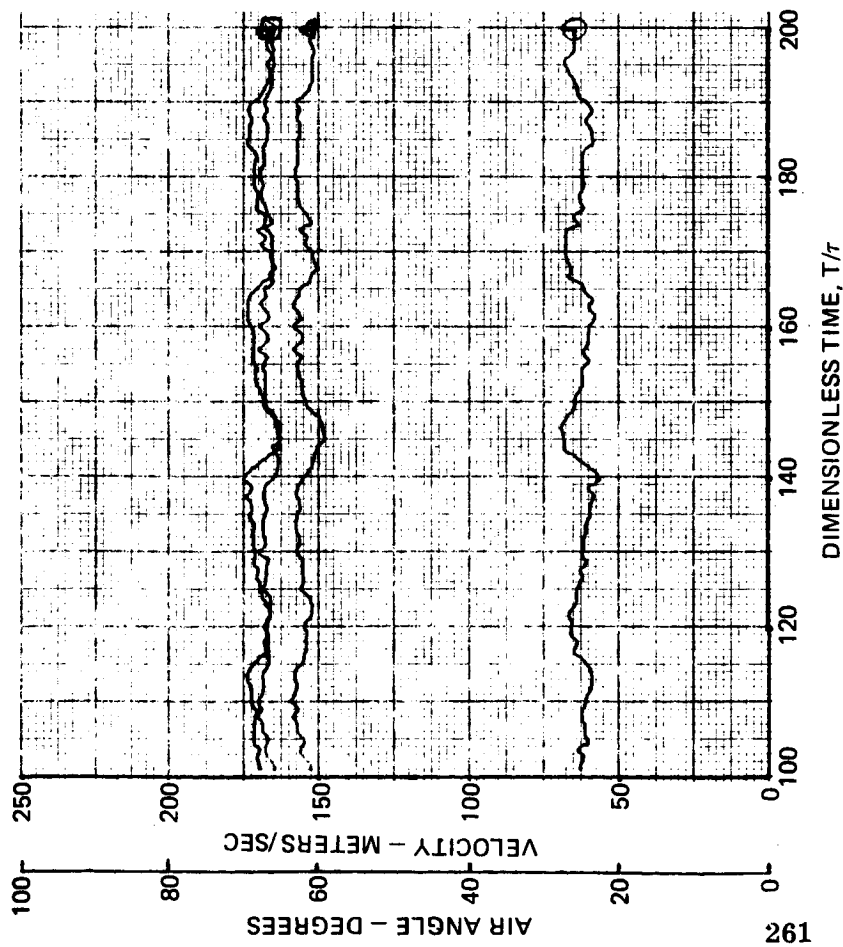




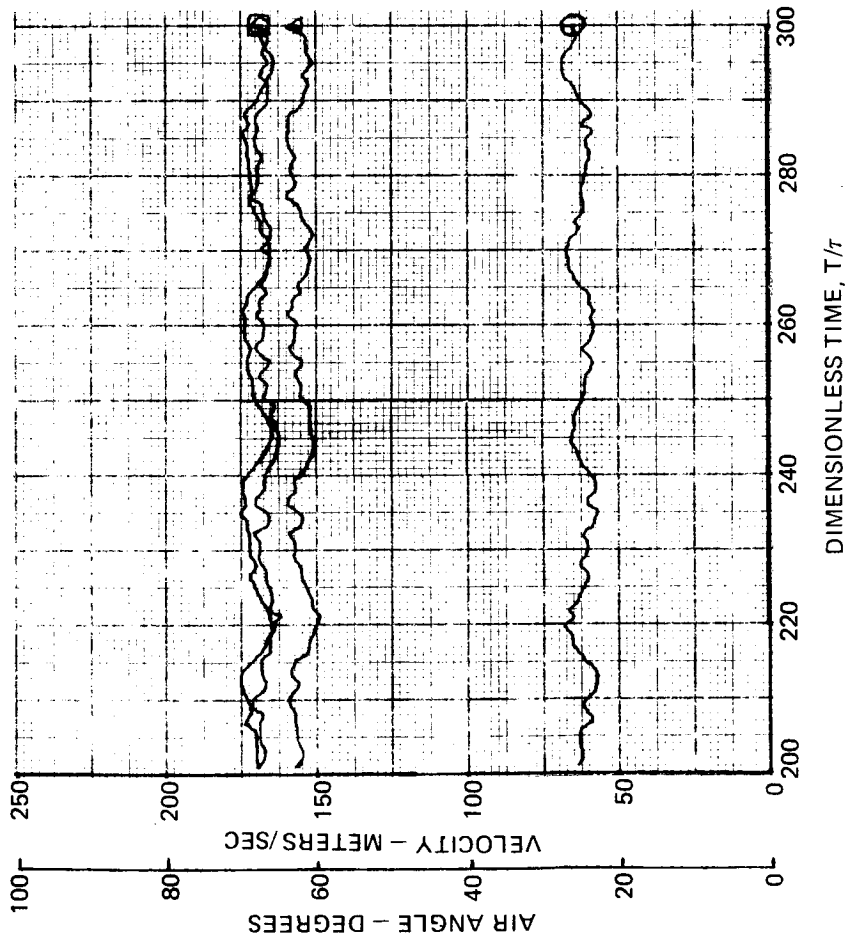


FIGURE E-4C. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 35 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

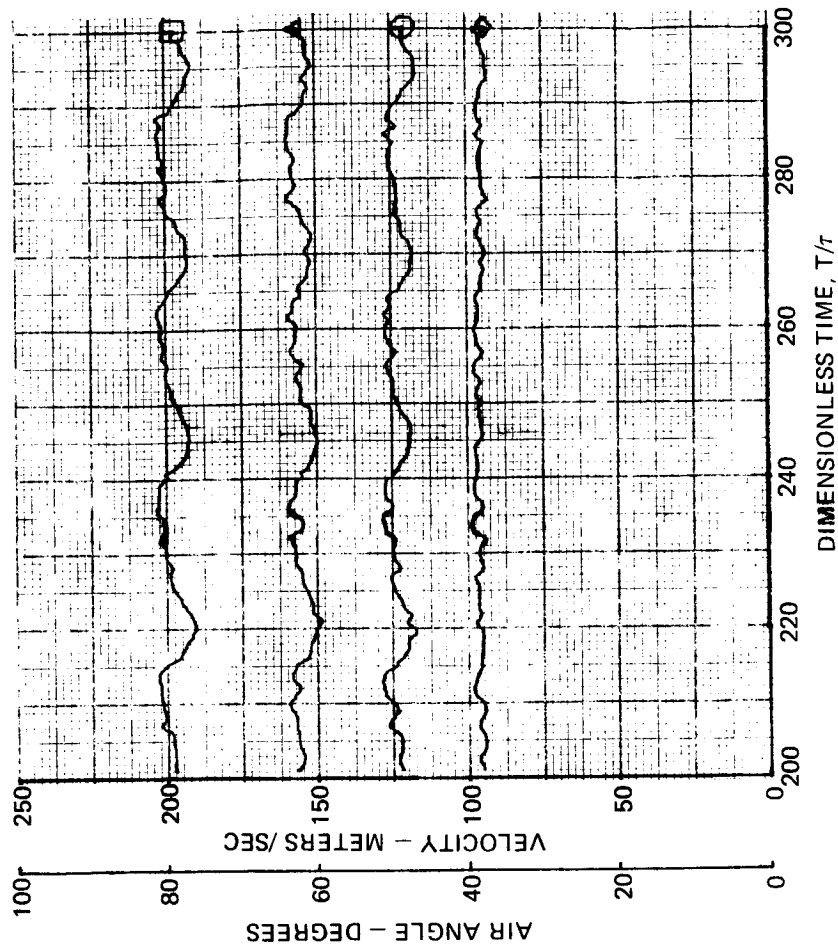






FIGURE E-5. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 45 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM

b) ROTOR COORDINATE SYSTEM

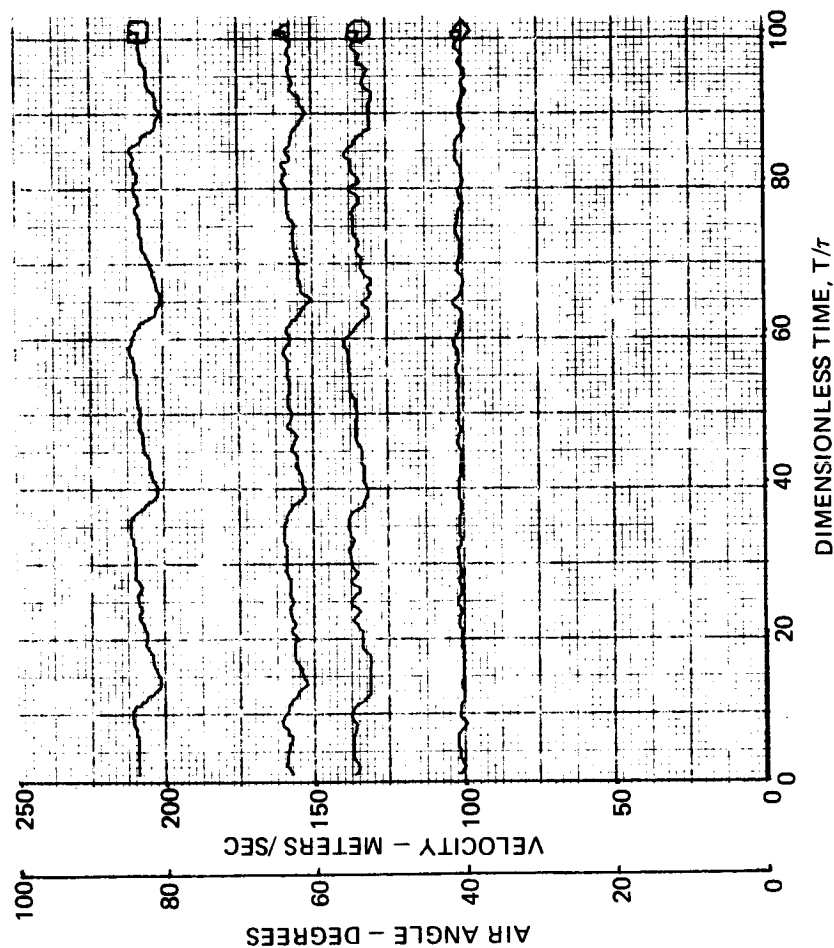
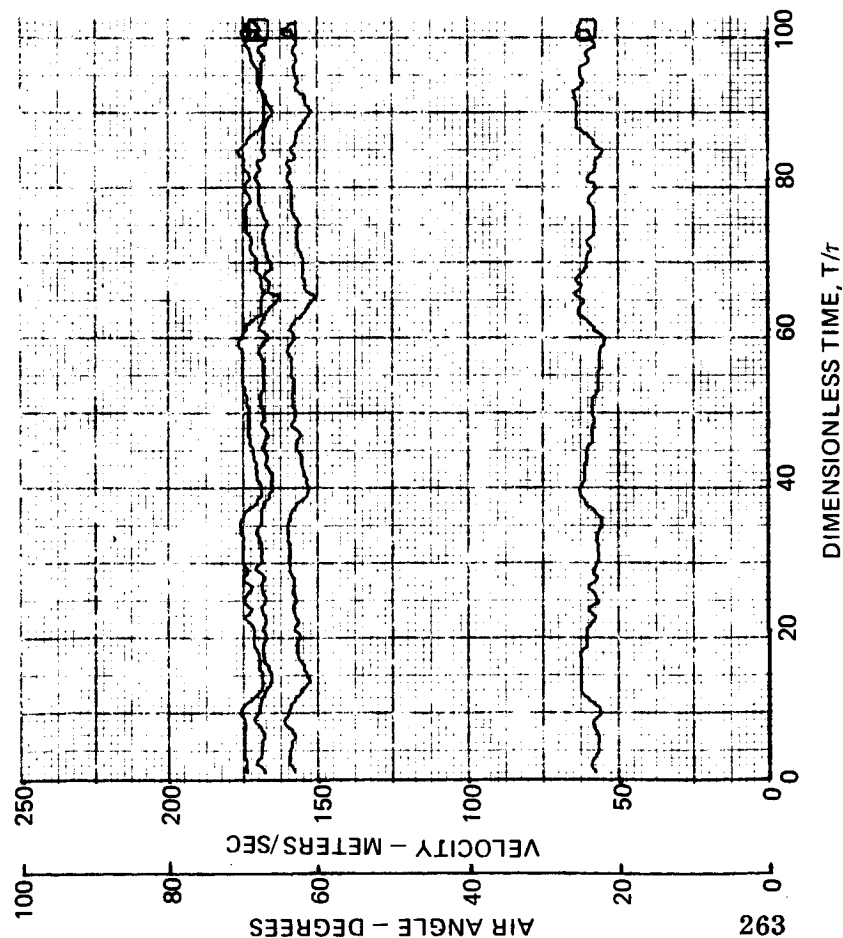




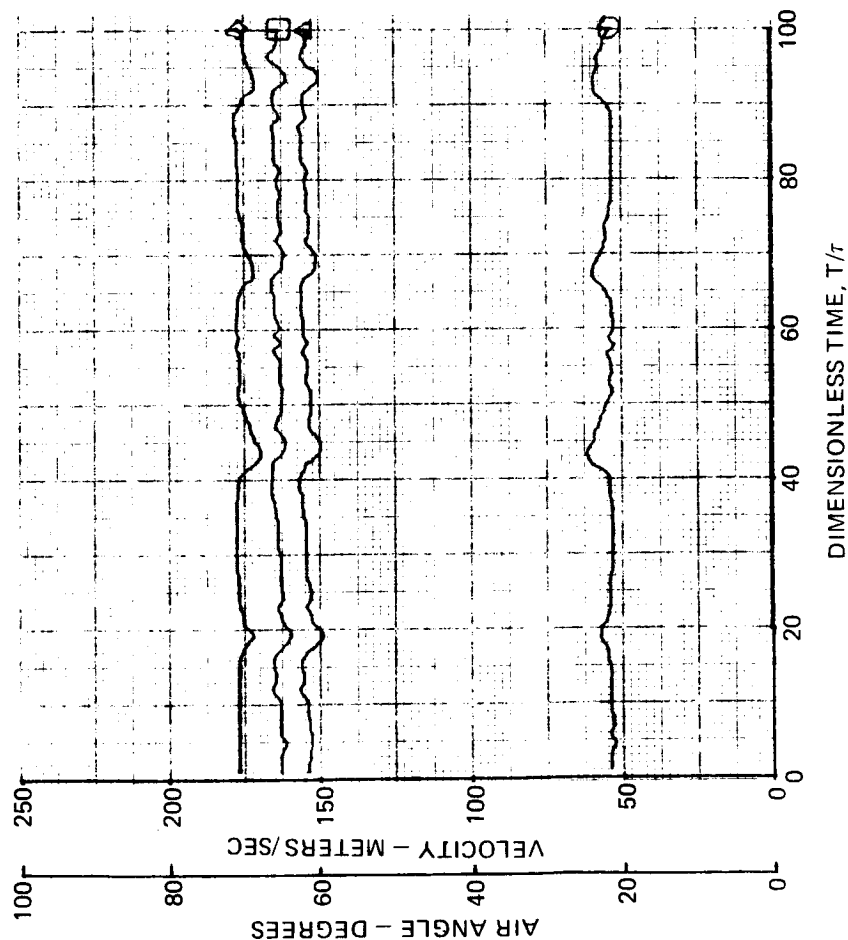


FIGURE E-6A. FLUCUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 55 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

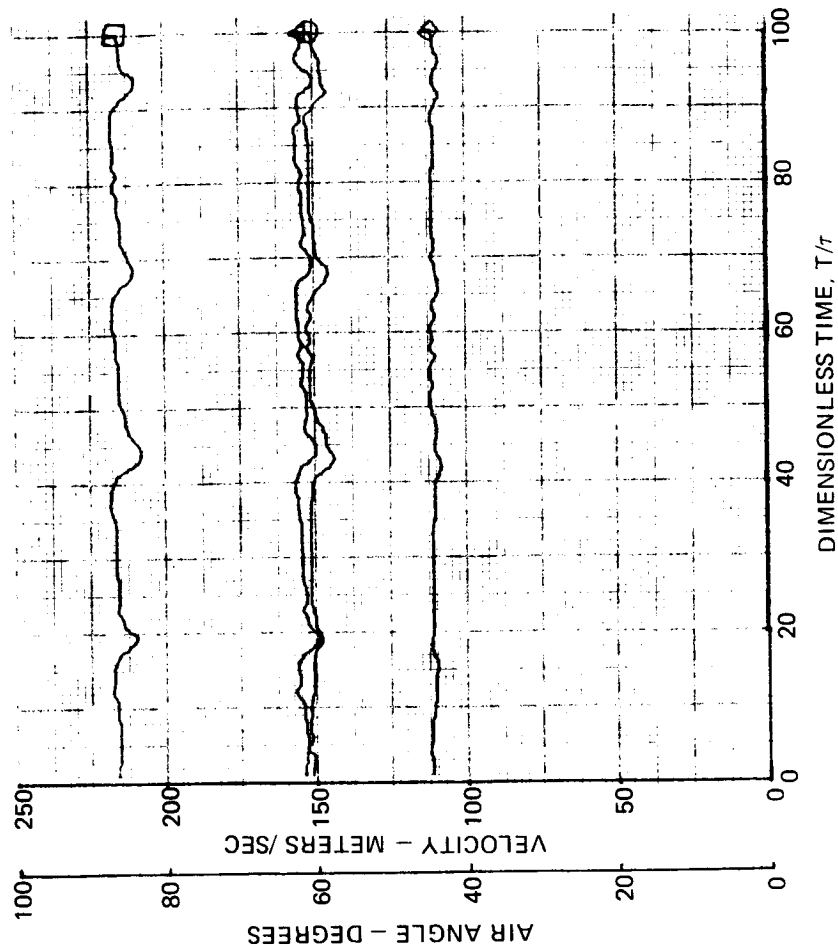




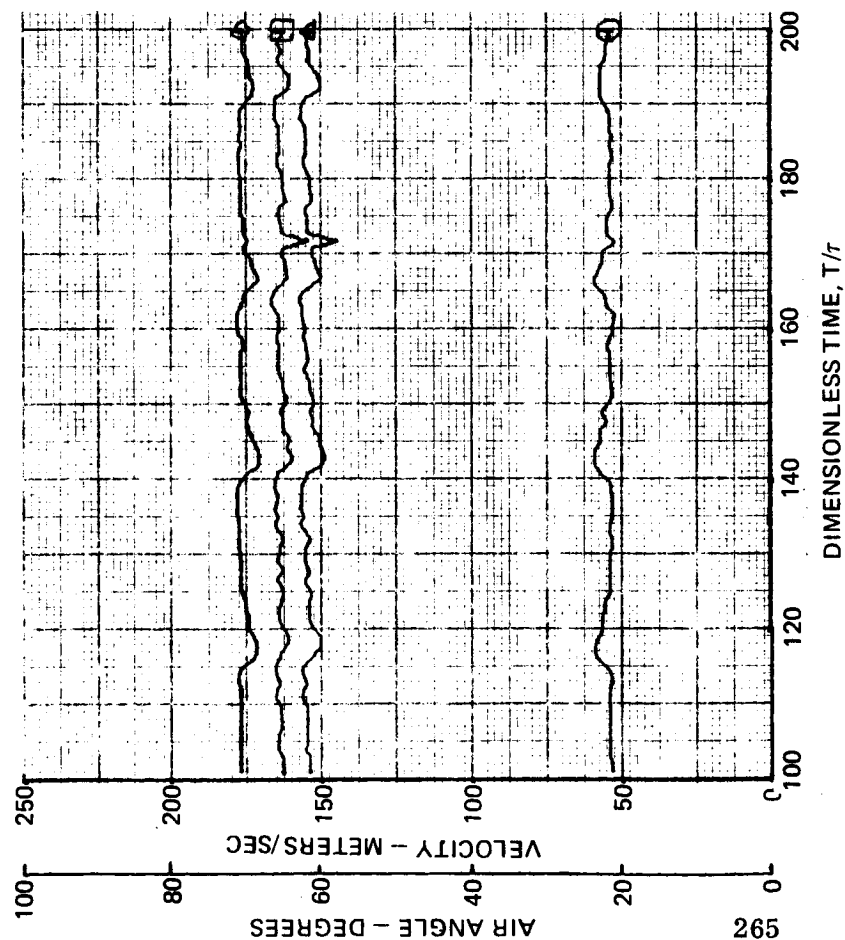


FIGURE E-6B. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 55 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

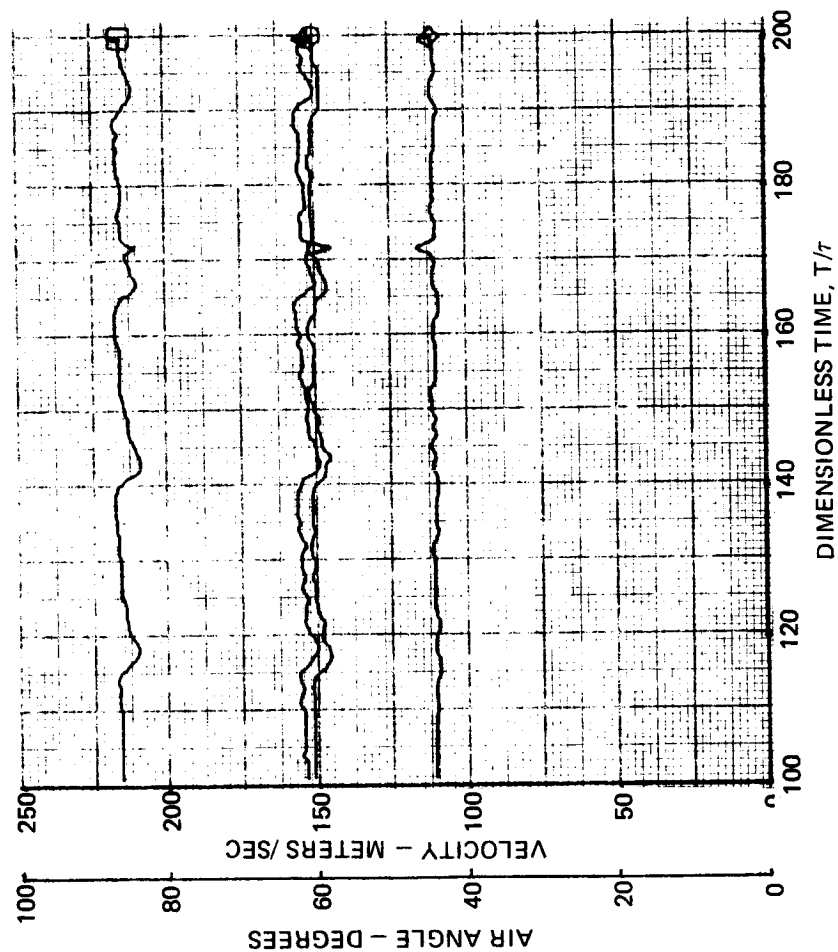




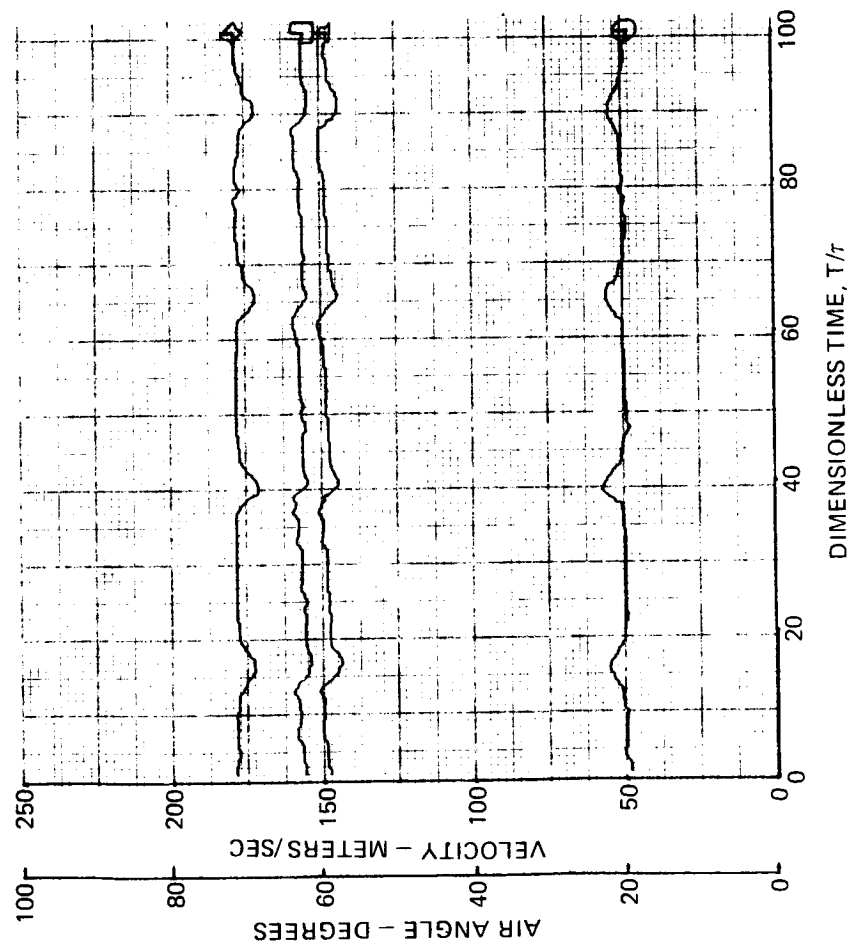


FIGURE E-7. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 65 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

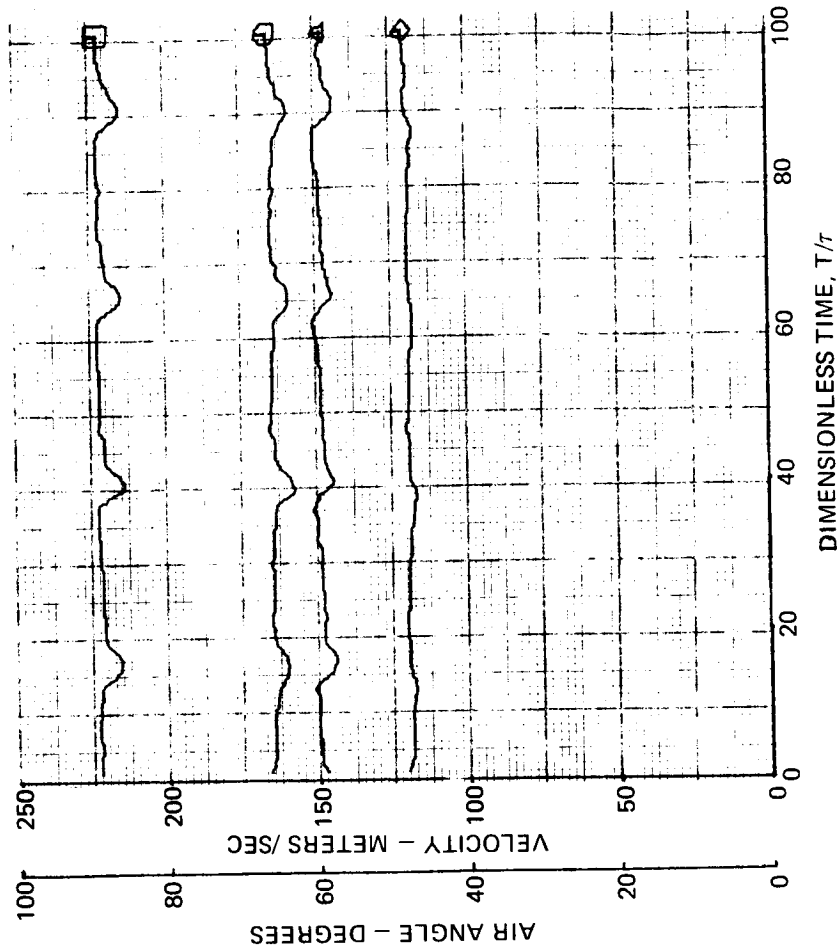




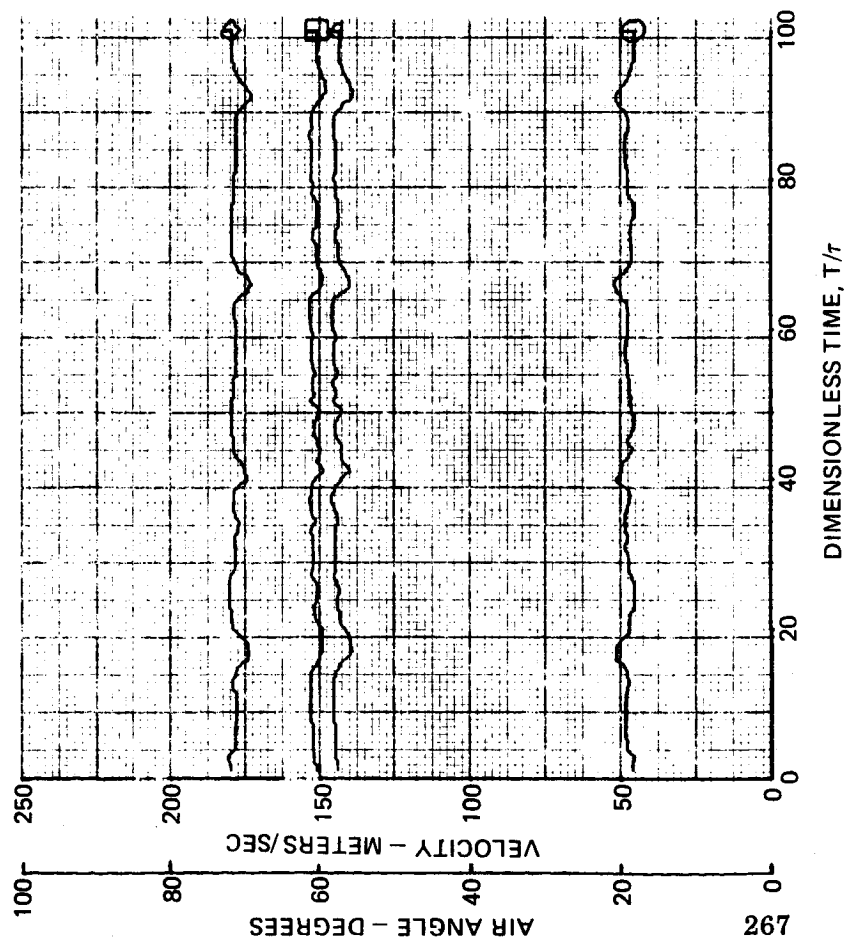


FIGURE E-8. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 75 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

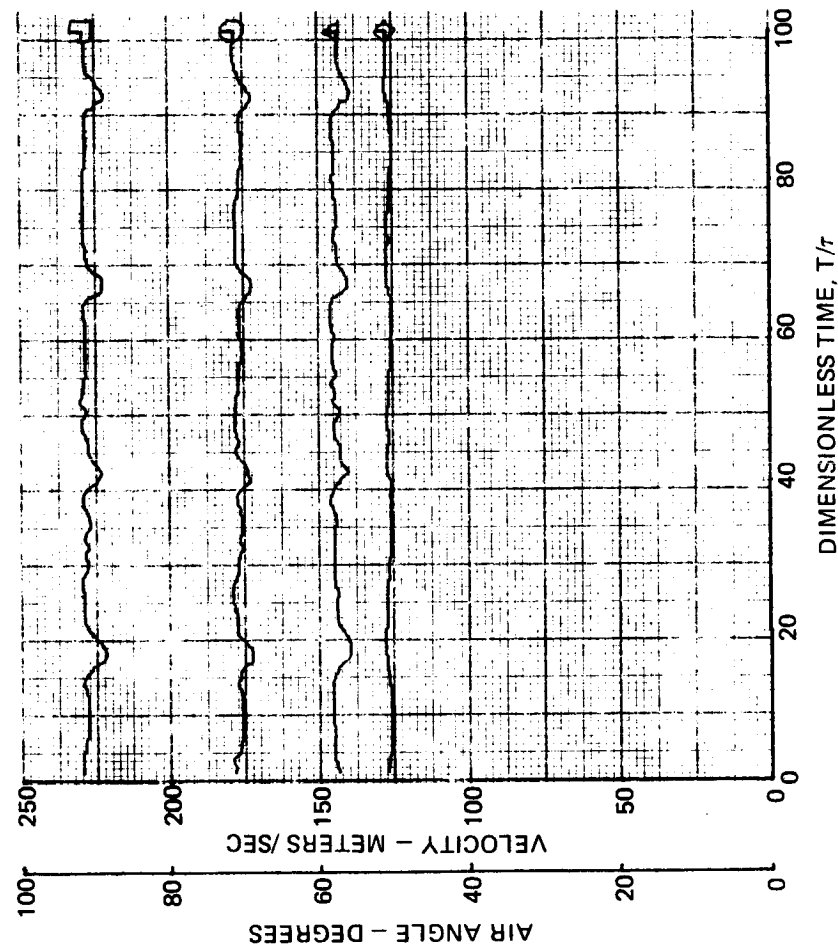




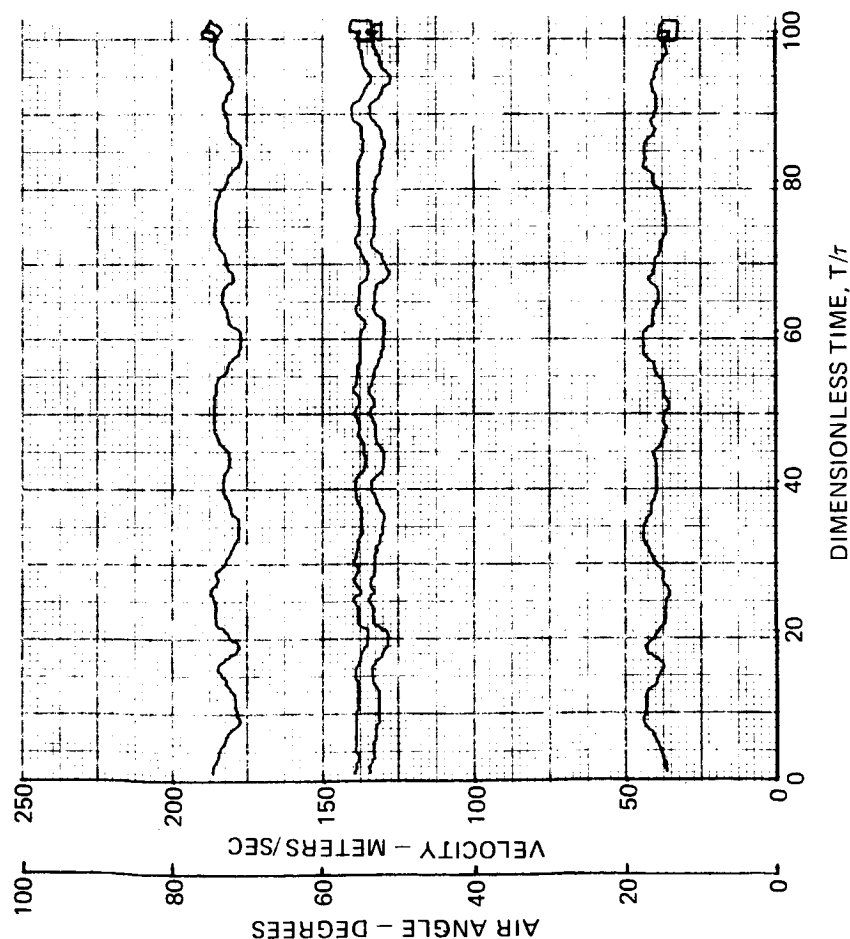


FIGURE E-9. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 85 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

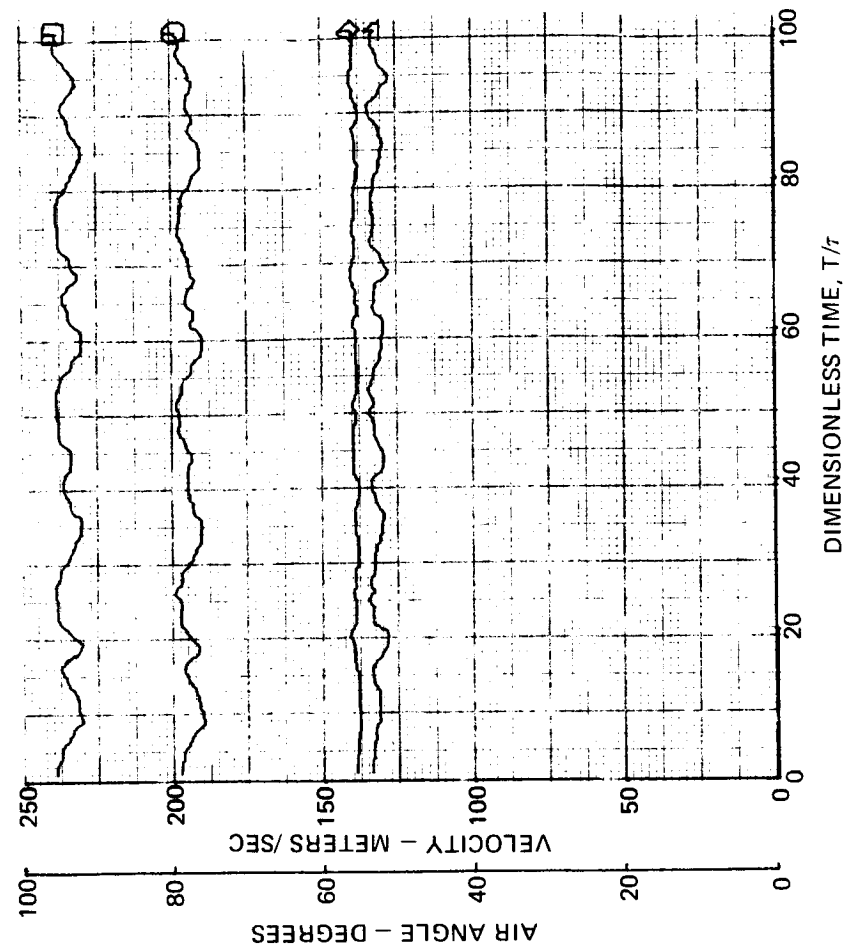








FIGURE E-10A. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 95 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM

b) ROTOR COORDINATE SYSTEM

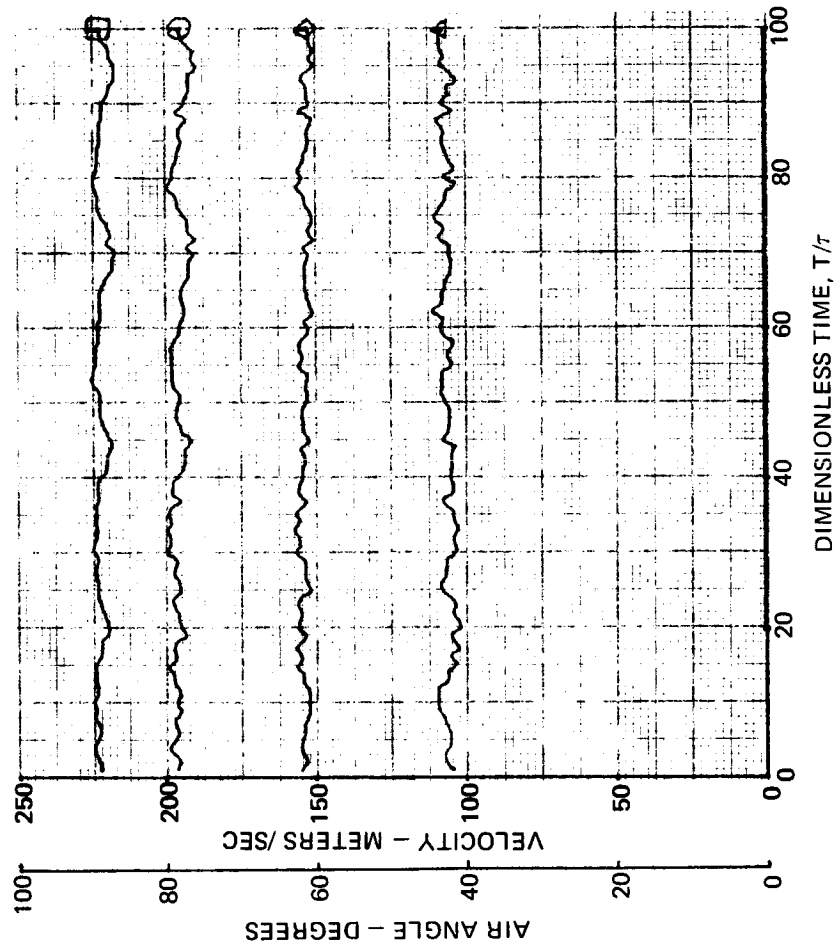
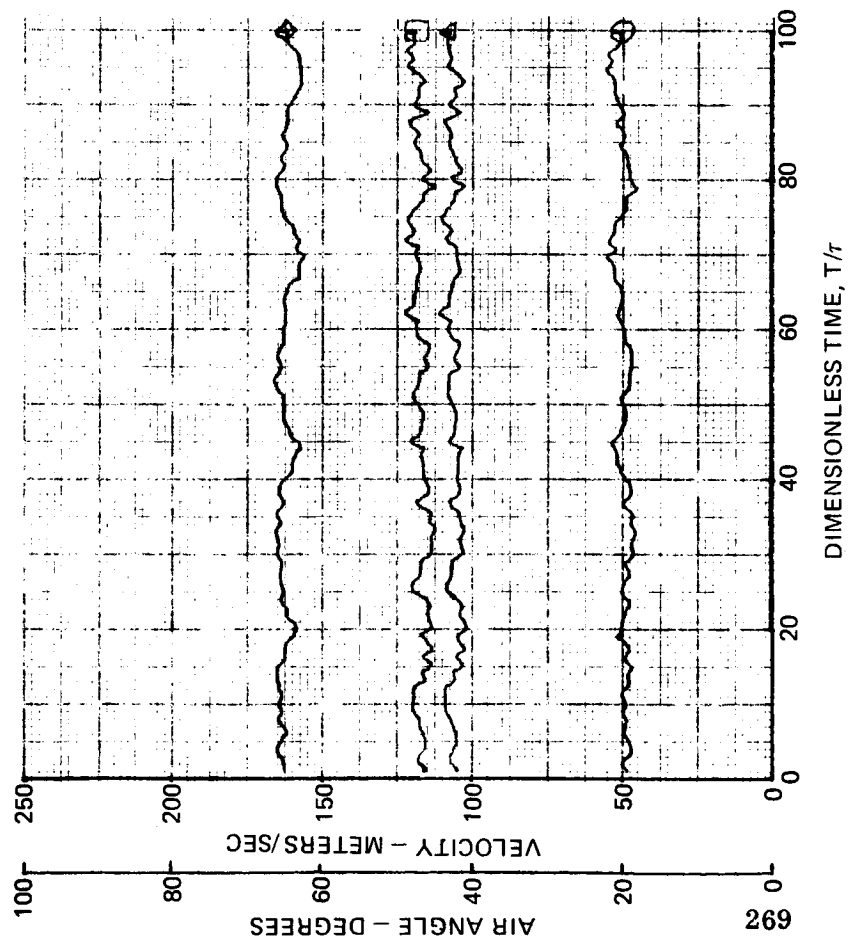




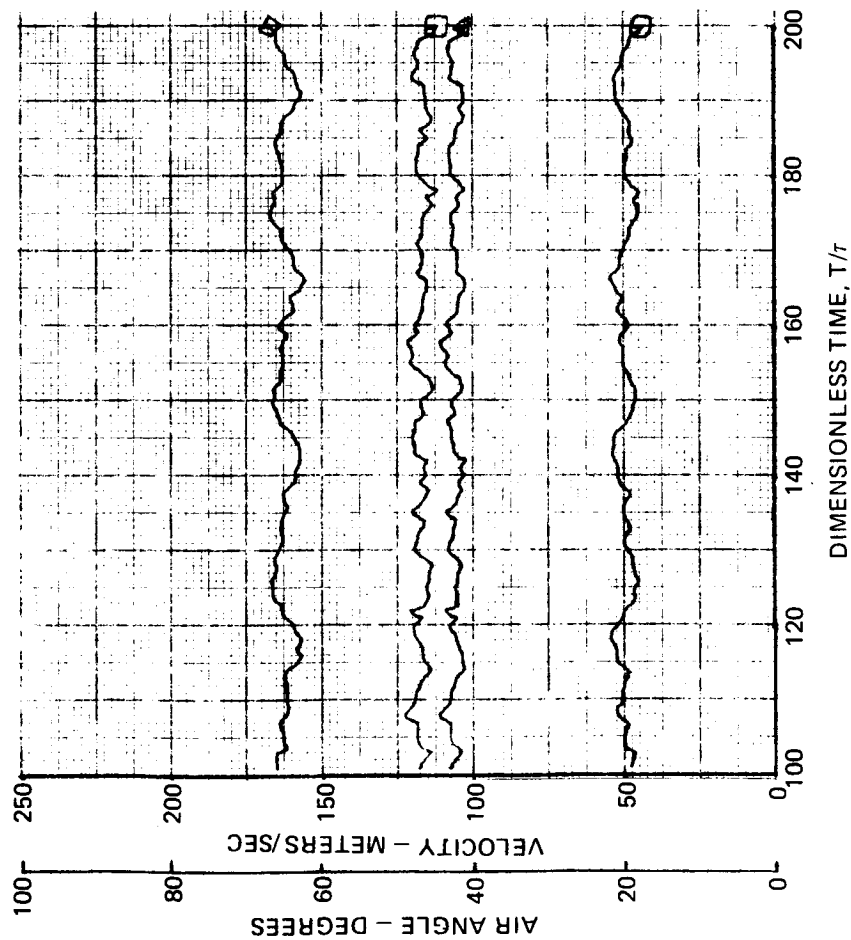


FIGURE E-10B. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 95 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

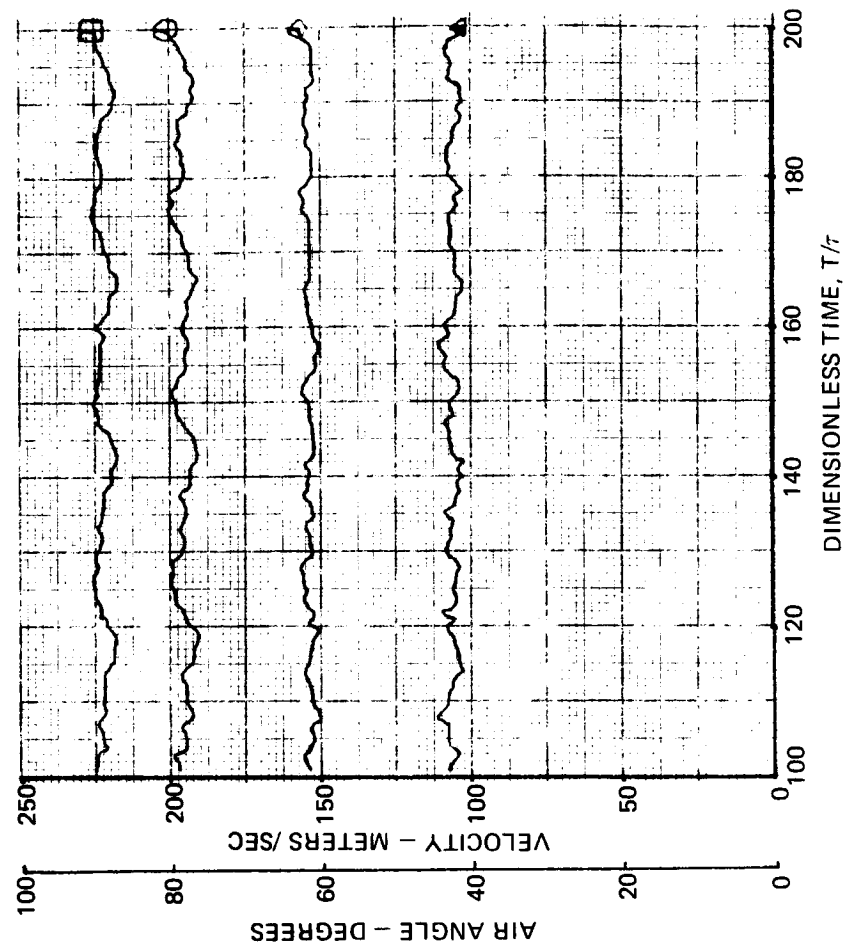
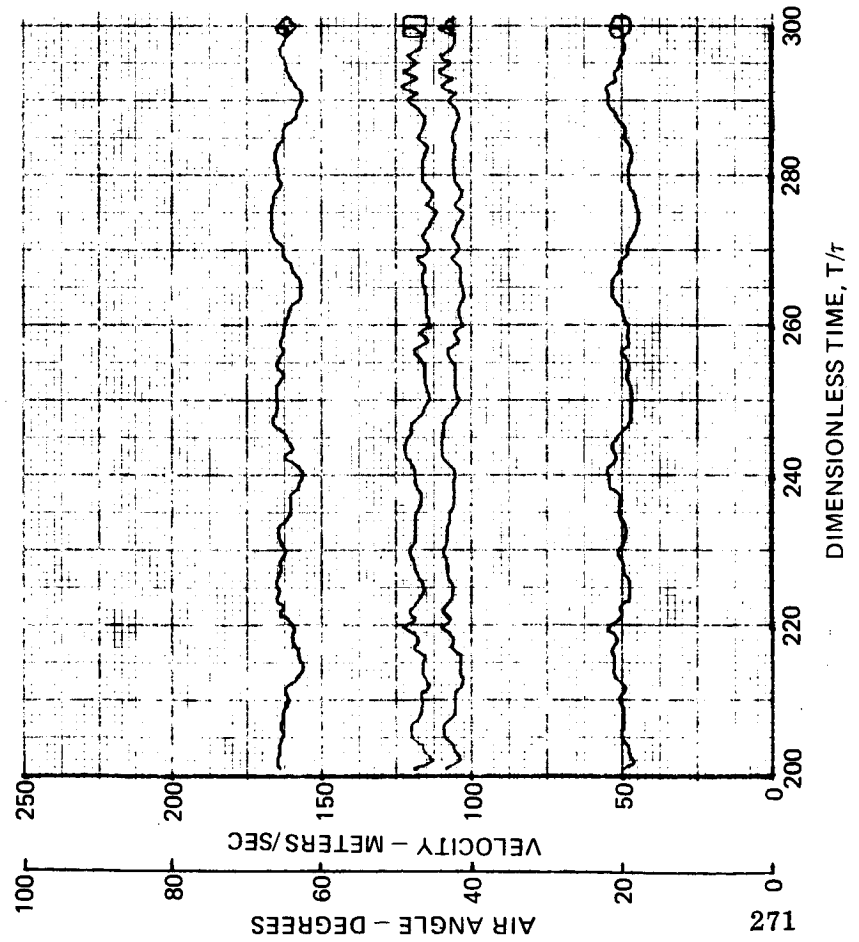


FIGURE E-10C. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION I

SPAN LOCATION - 95 PERCENT FROM ROOT

SYMBOL	□	○	△	◇
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

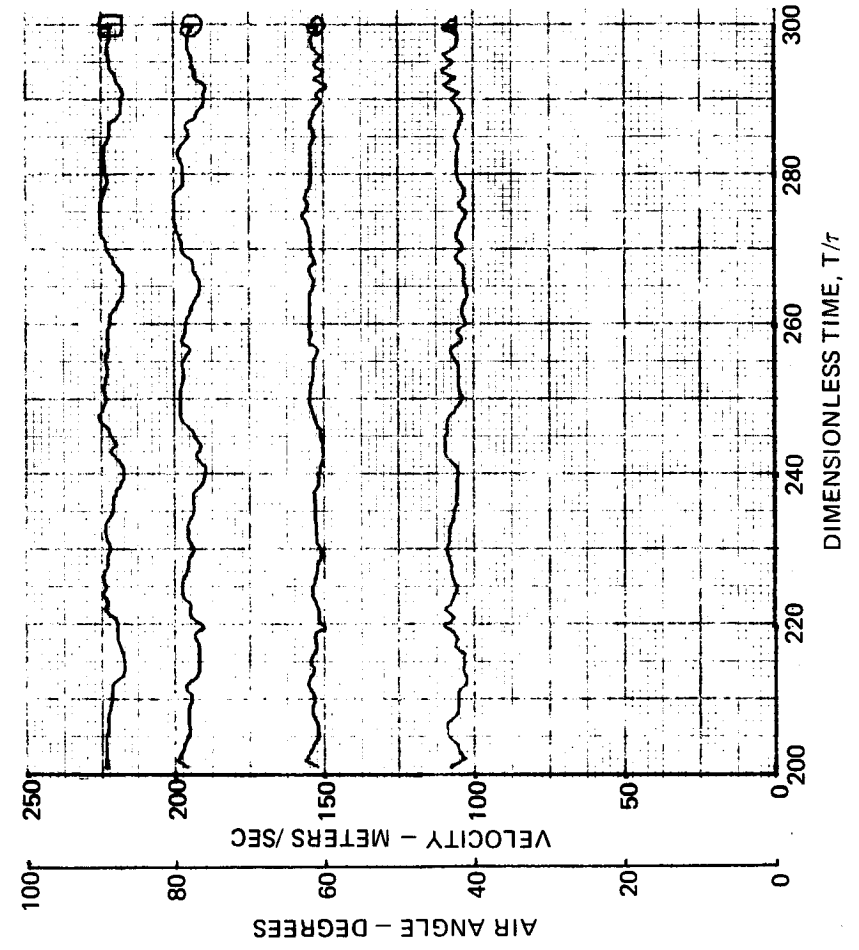
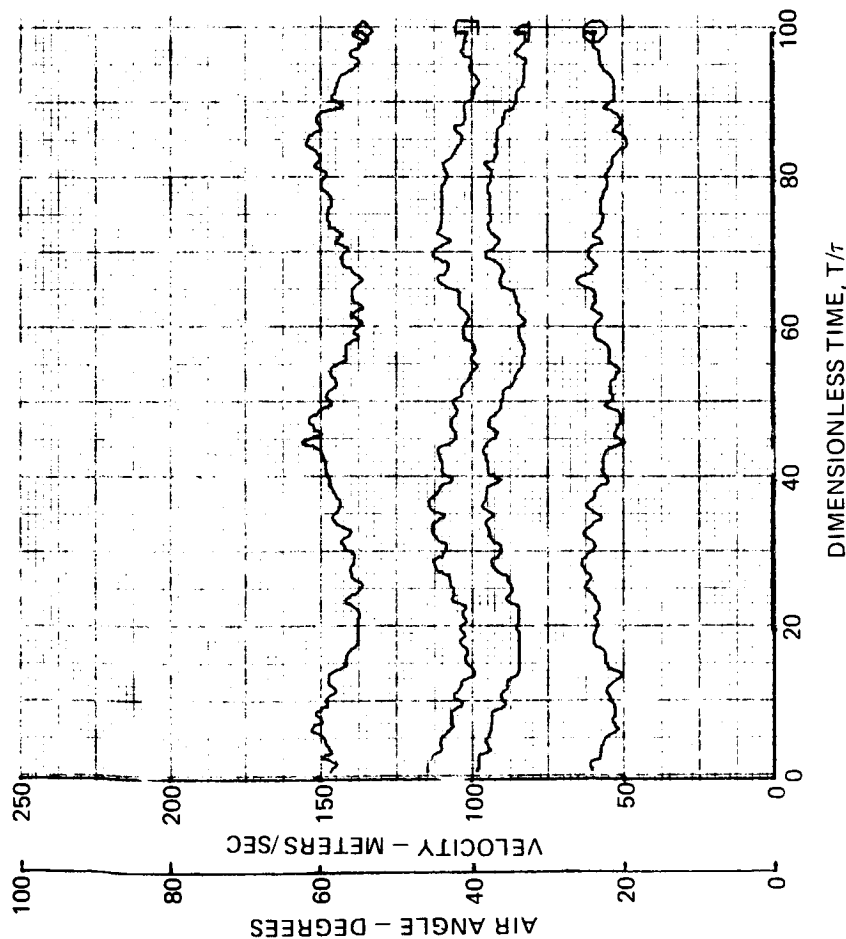


FIGURE E-11. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION II

SPAN LOCATION - 15 PERCENT FROM ROOT

SYMBOL	□	○	Δ	◇
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

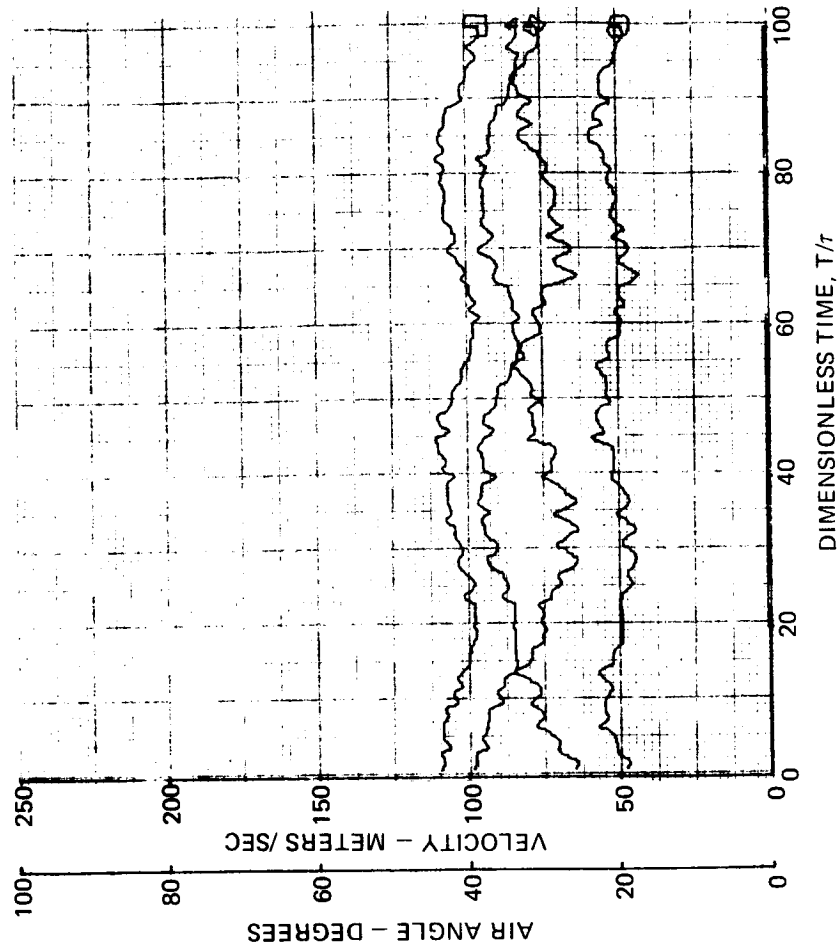




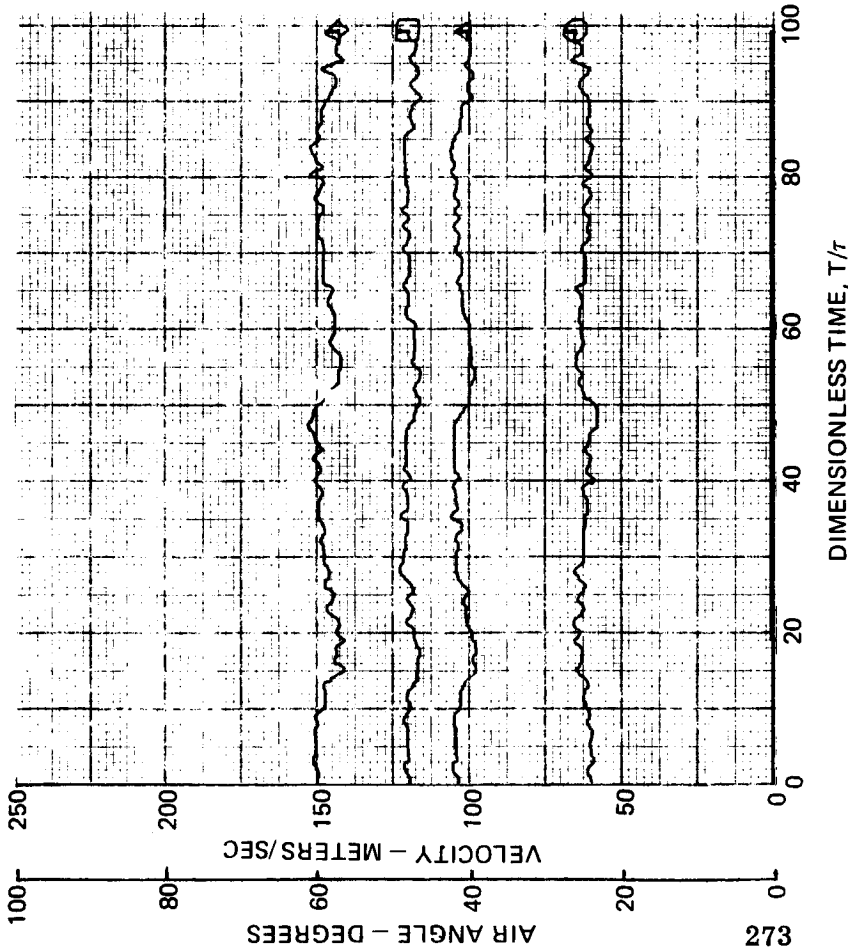


FIGURE E-12. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION II

SPAN LOCATION - 35 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

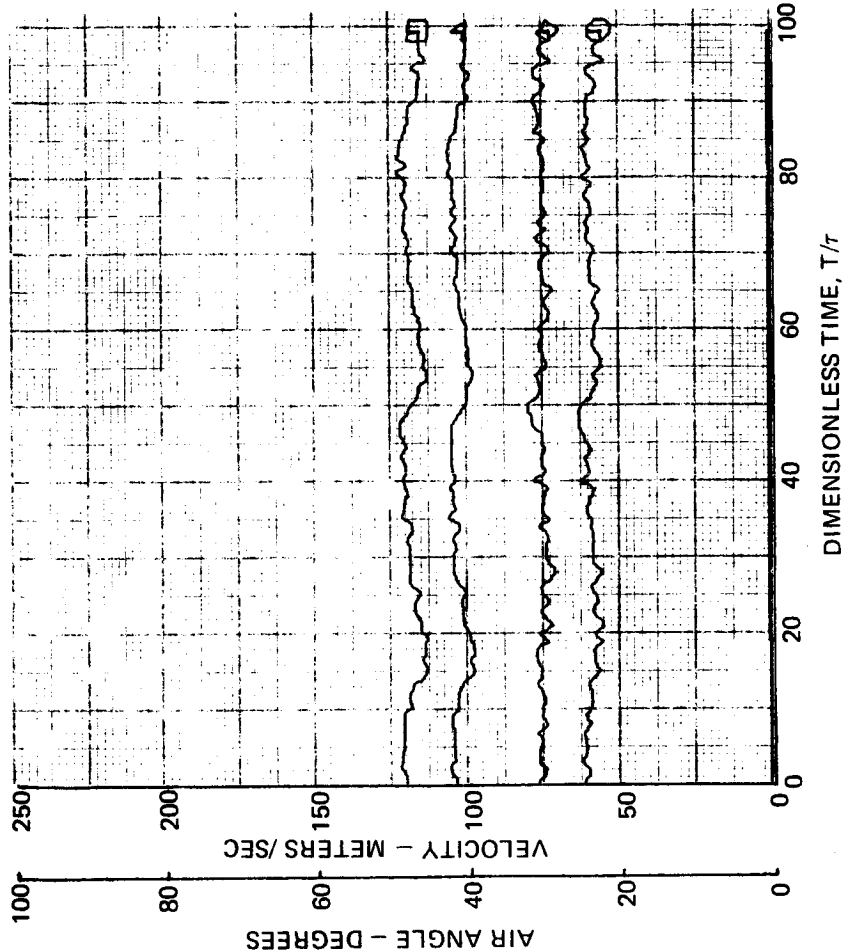




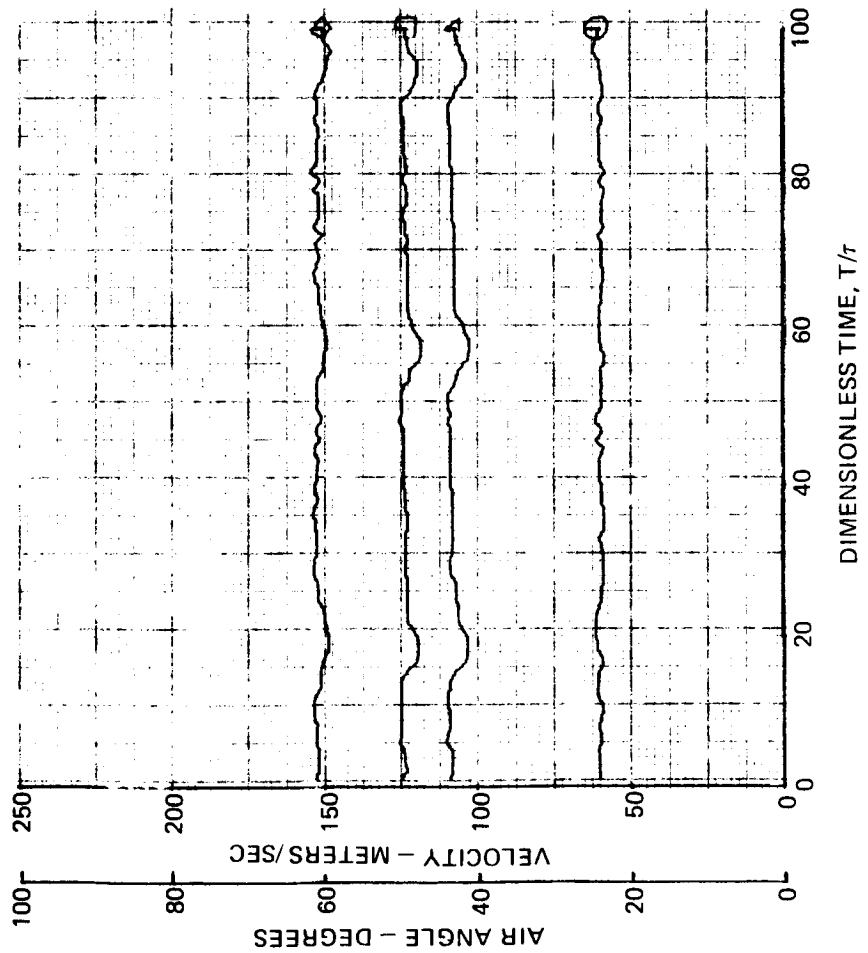


FIGURE E-13. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION II

SPAN LOCATION - 55 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

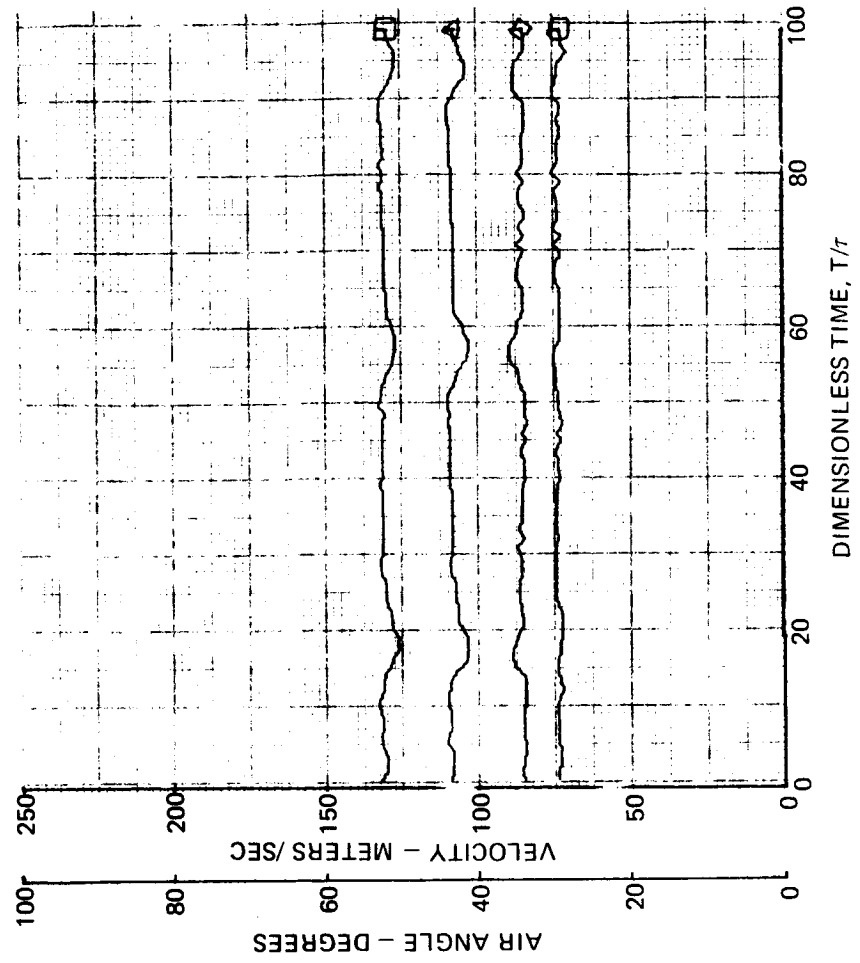
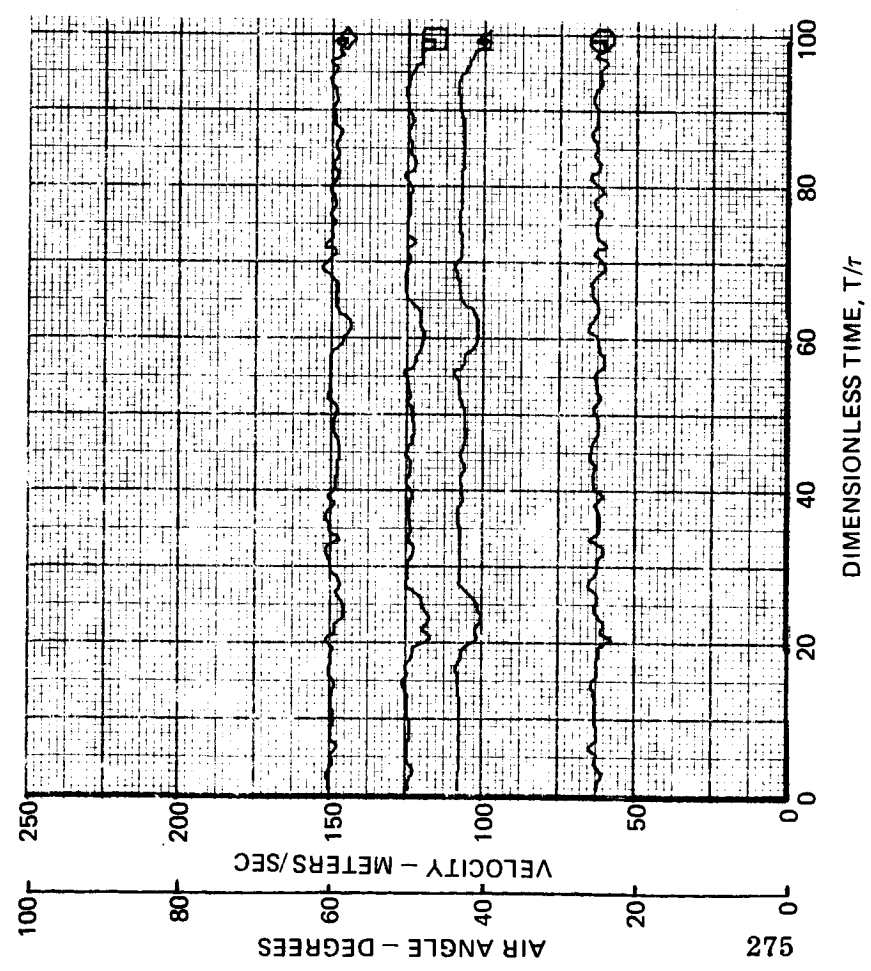


FIGURE E-14. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION II

SPAN LOCATION - 75 PERCENT FROM ROOT

SYMBOL	□	○	△	◇
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

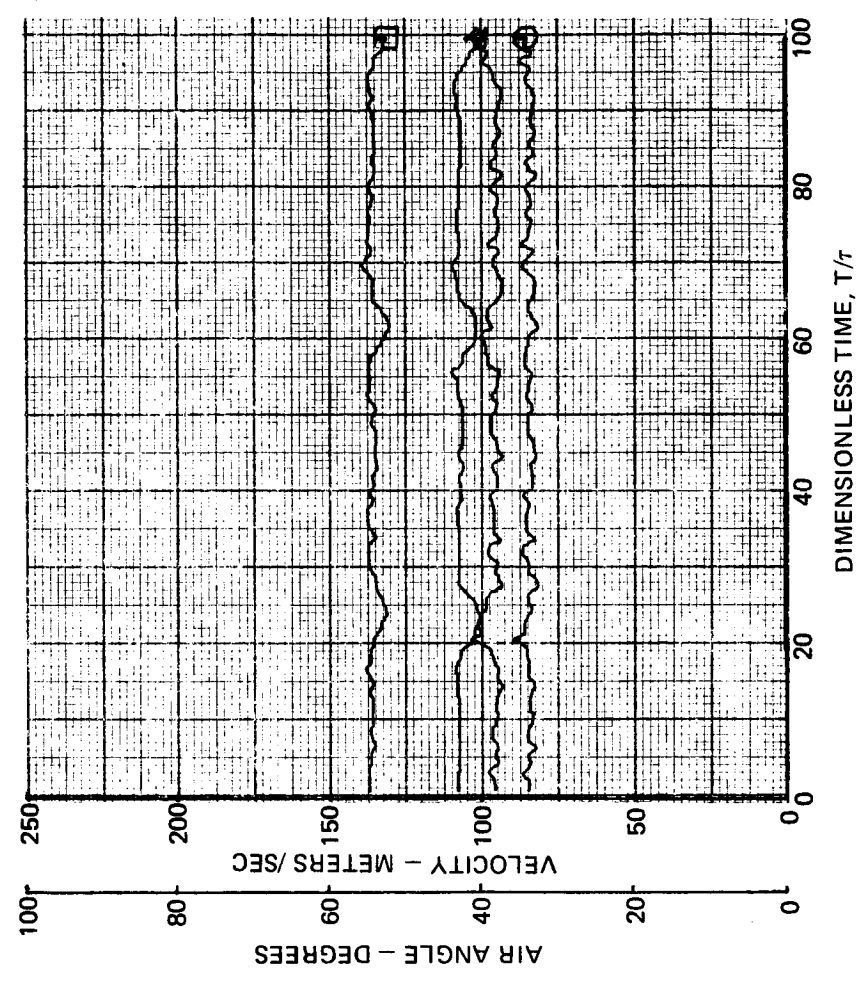




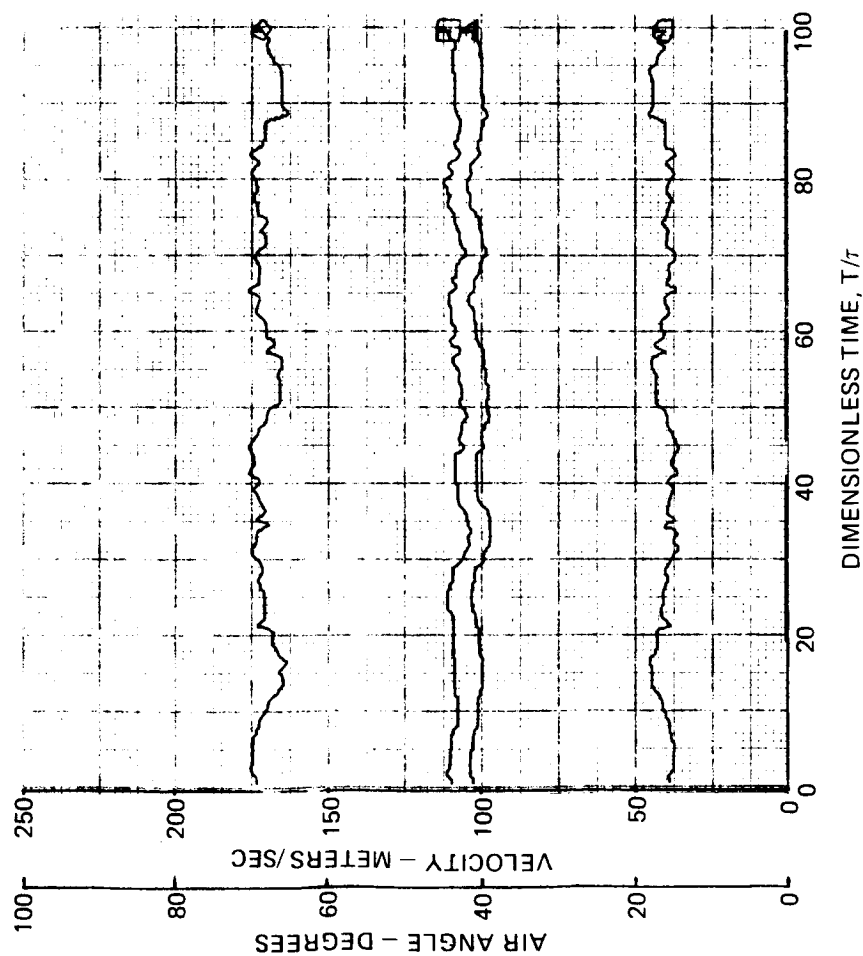


FIGURE E-15. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION II

SPAN LOCATION - 95 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

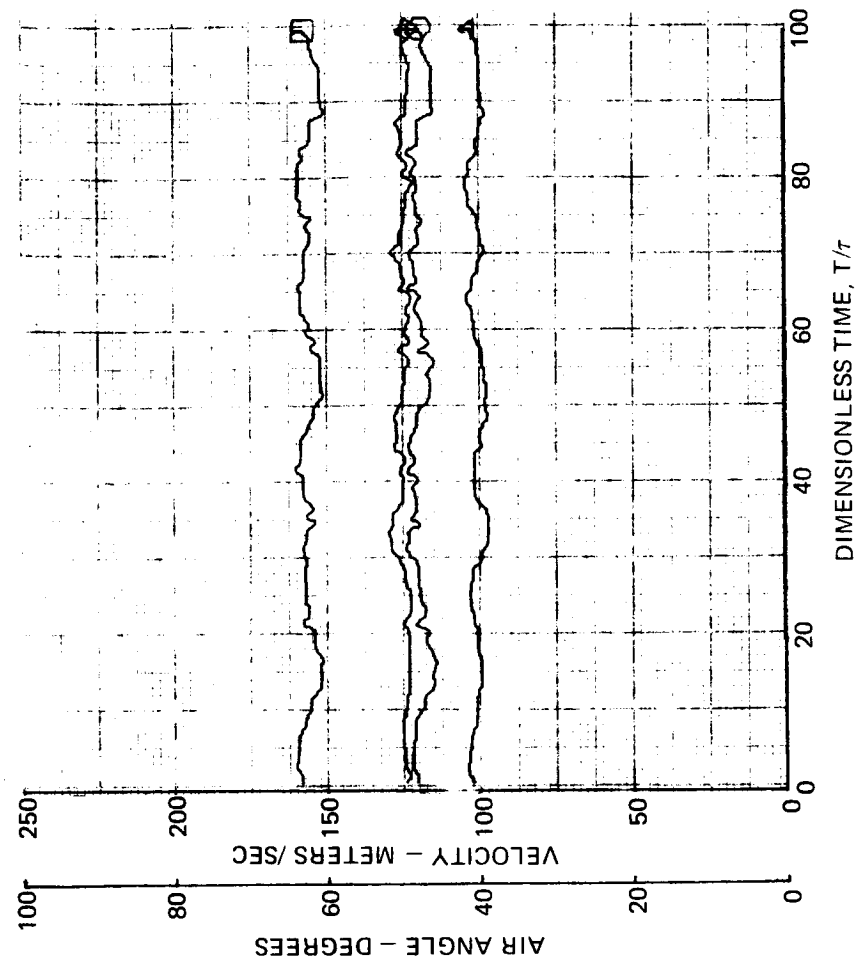








FIGURE E-16. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION III

SPAN LOCATION - 35 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM

b) ROTOR COORDINATE SYSTEM

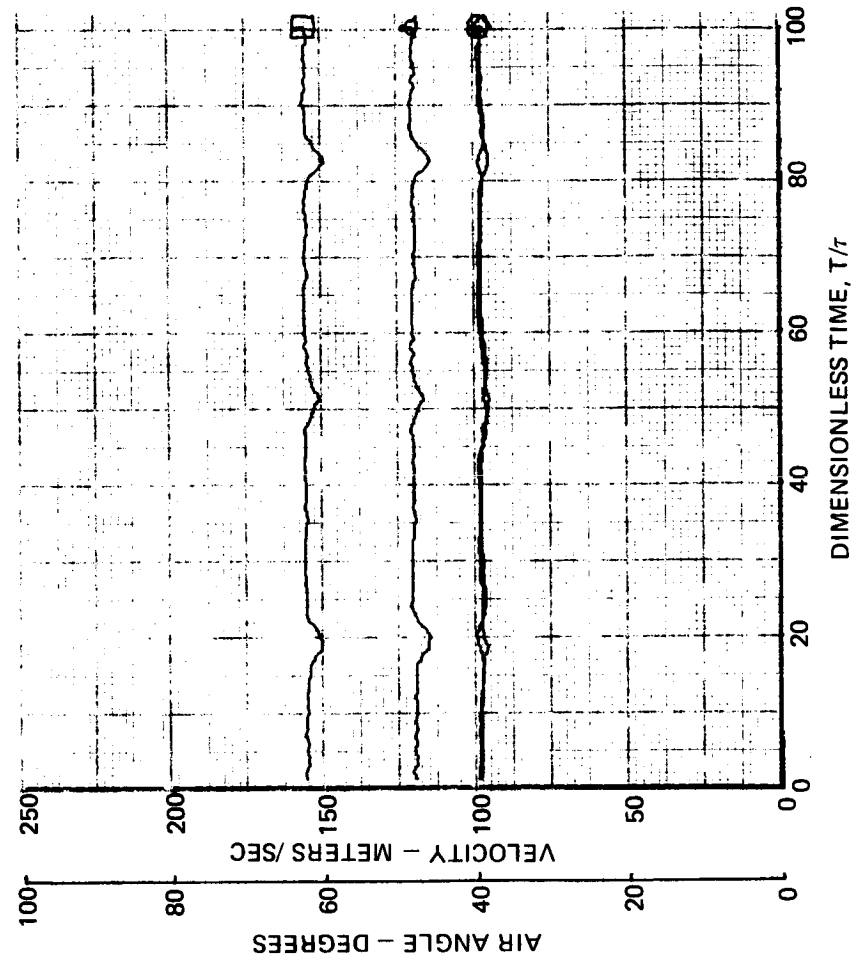
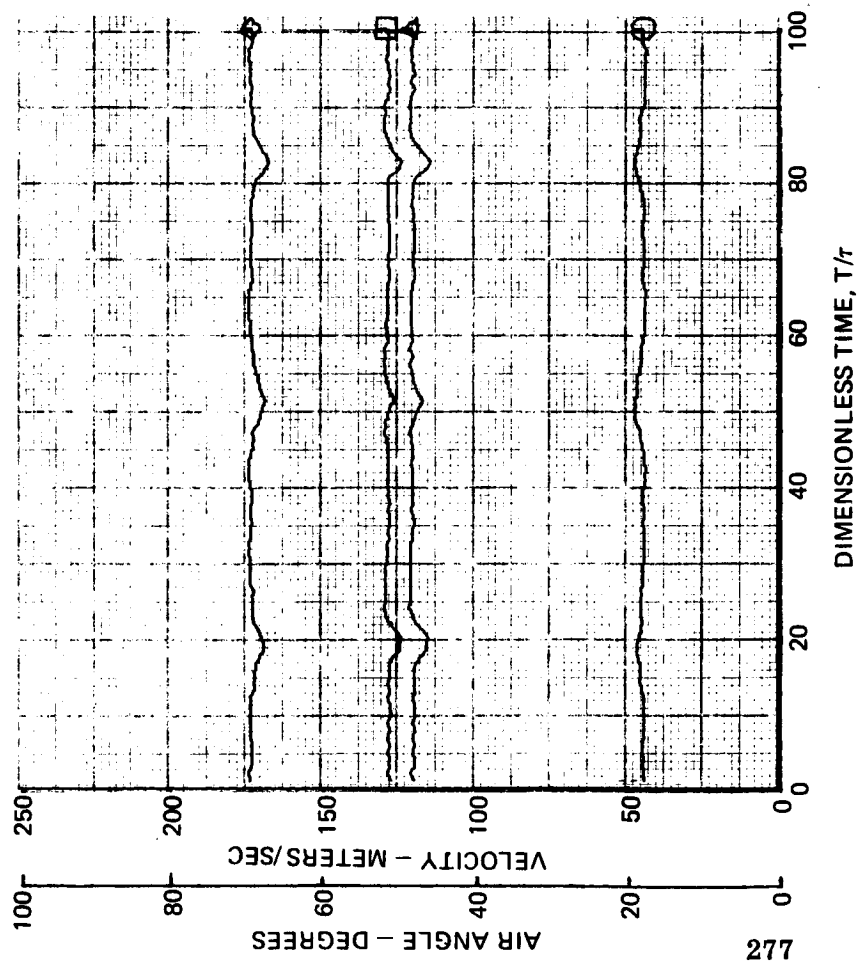
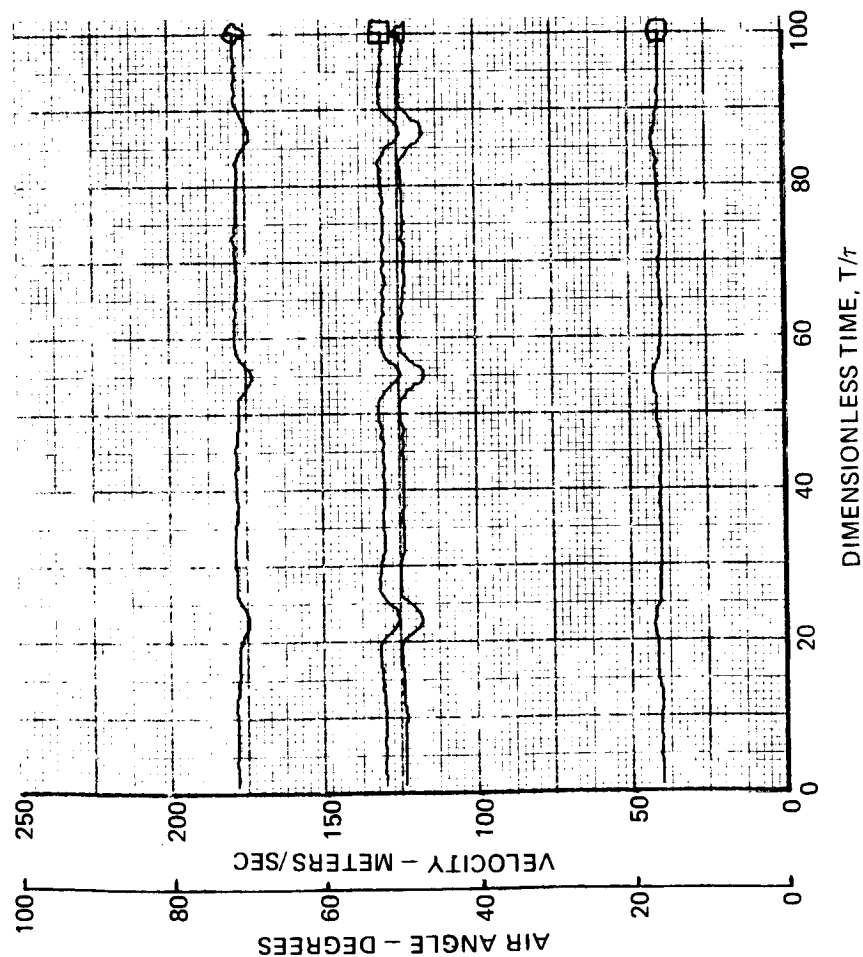


FIGURE E-17. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION III

SPAN LOCATION - 55 PERCENT FROM ROOT

SYMBOL	$\square$	$\circ$	$\Delta$	$\diamond$
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

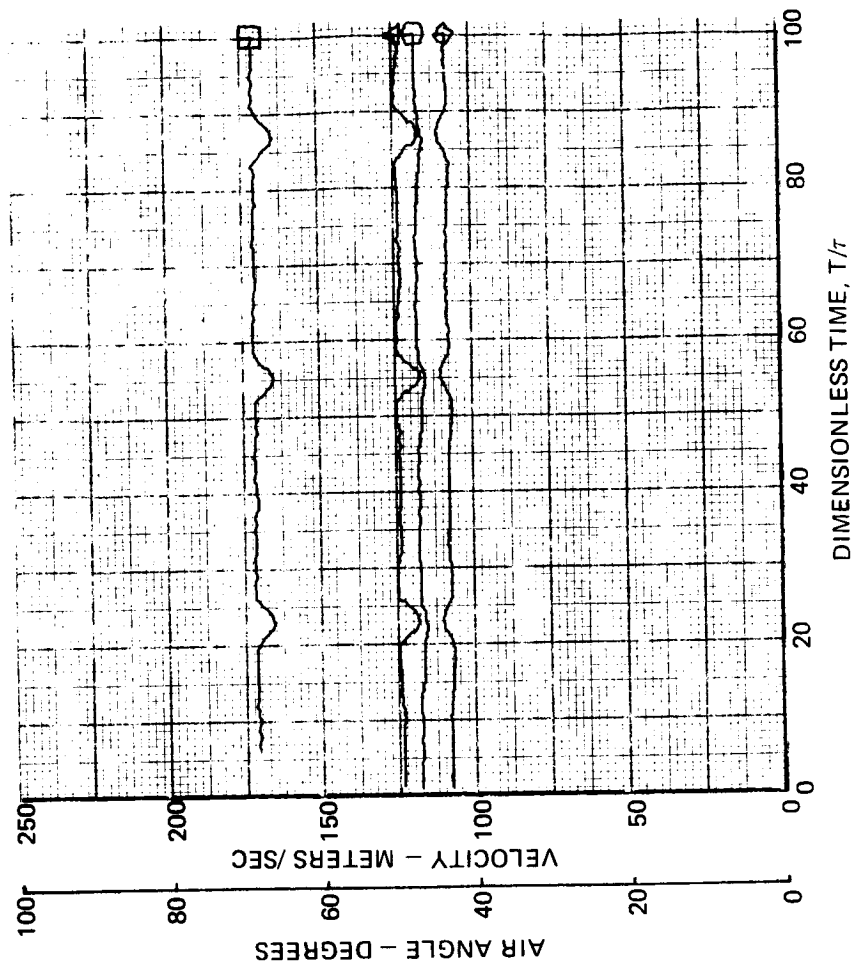




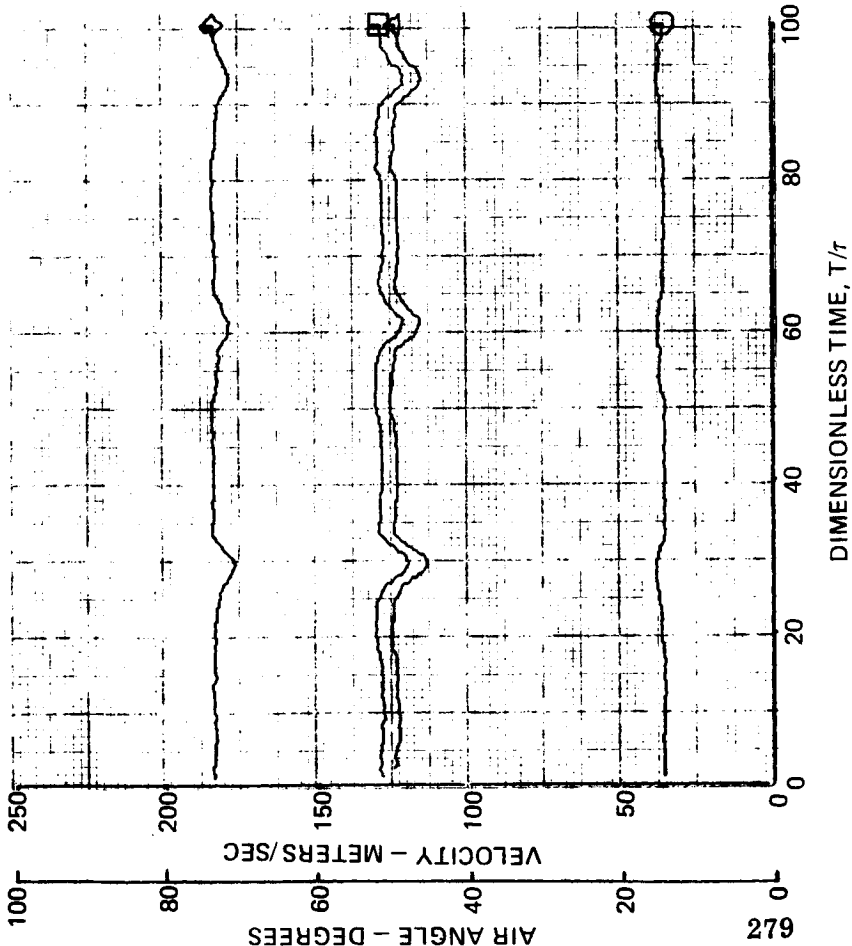


FIGURE E-18. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION III

SPAN LOCATION - 75 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

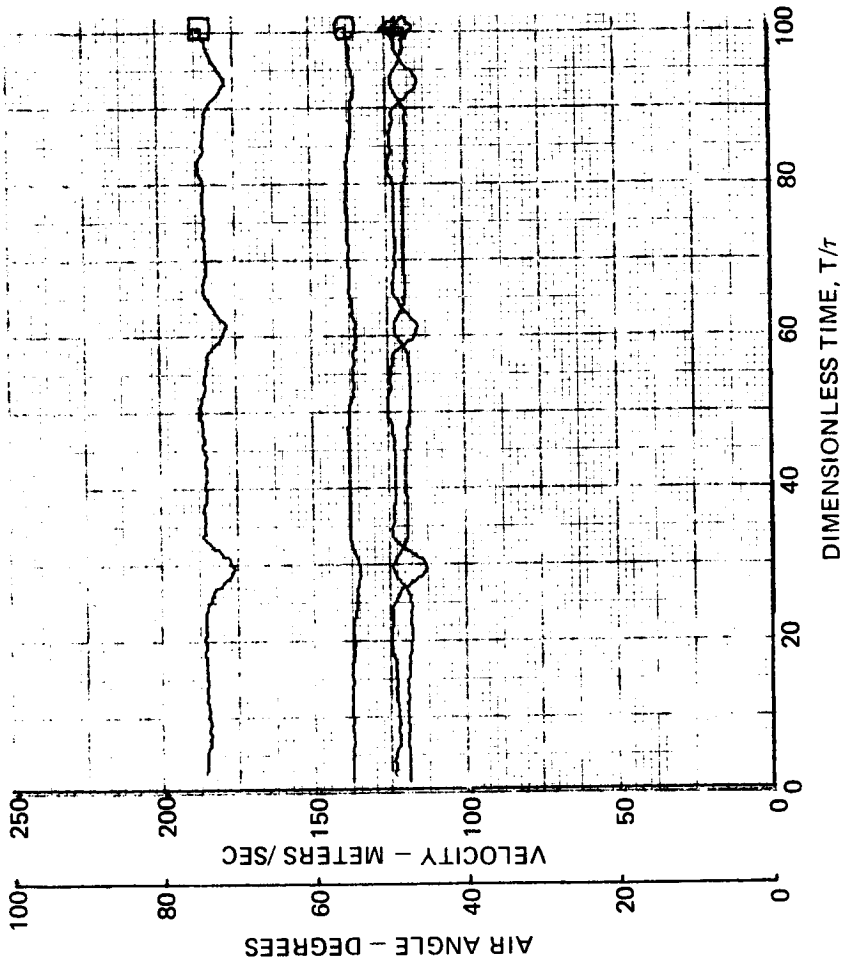




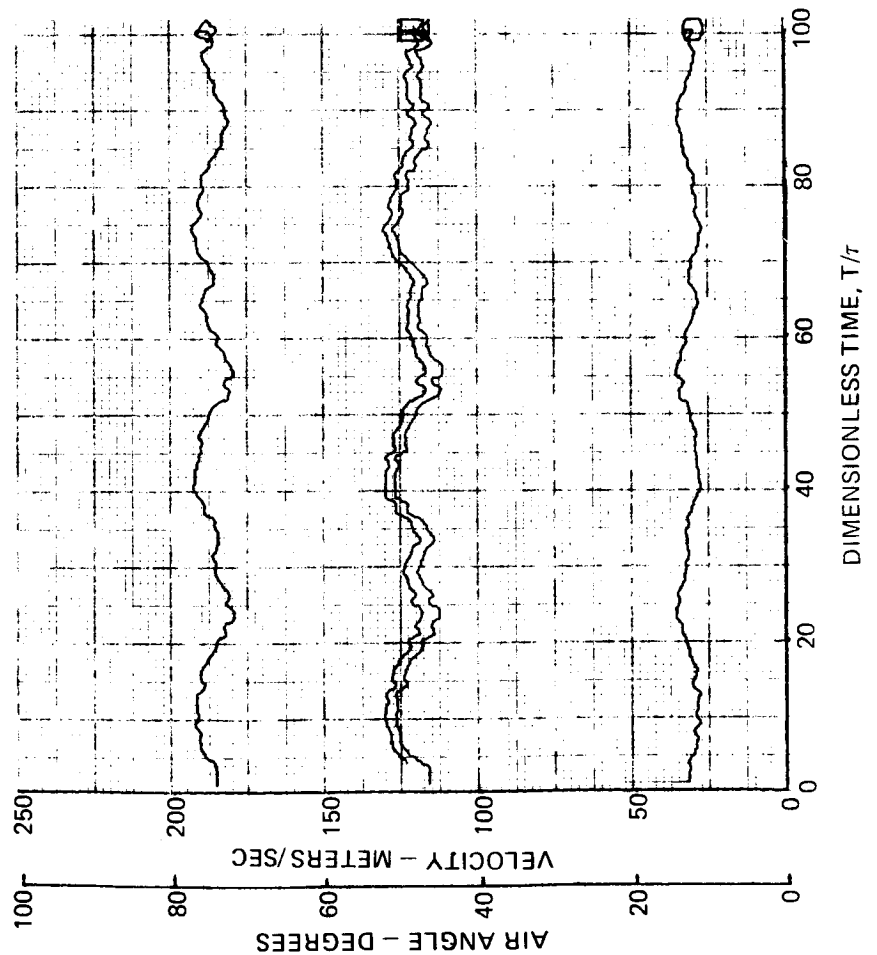


FIGURE E-19. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION III

SPAN LOCATION - 85 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

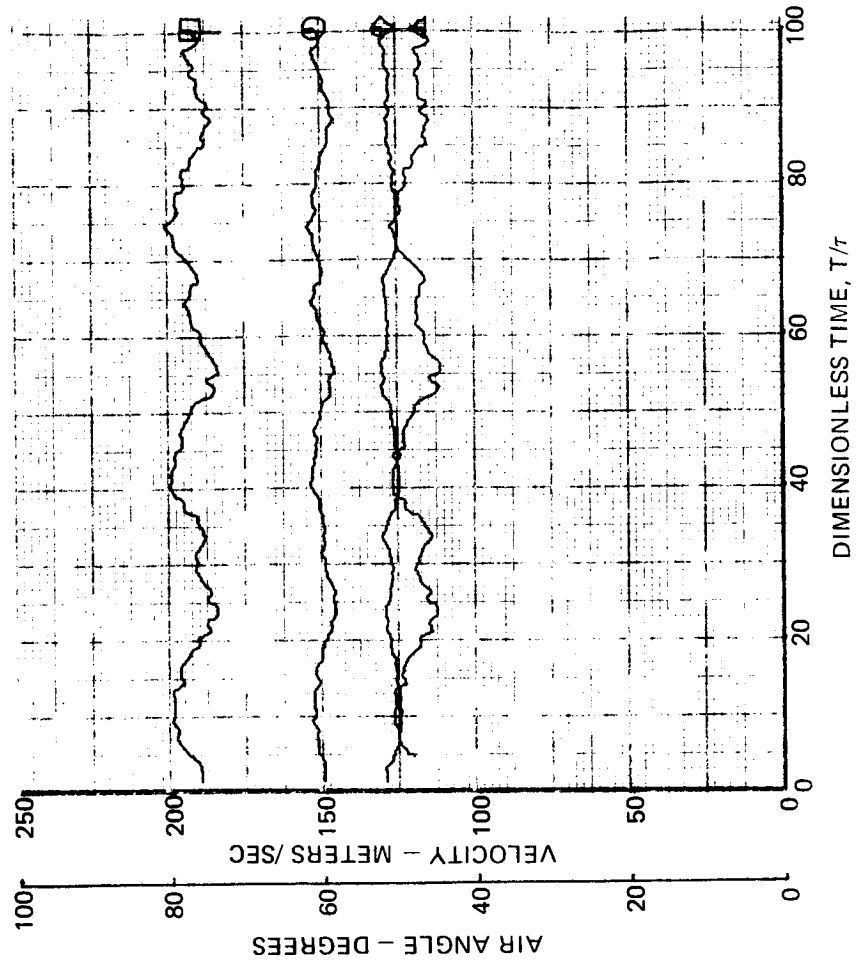




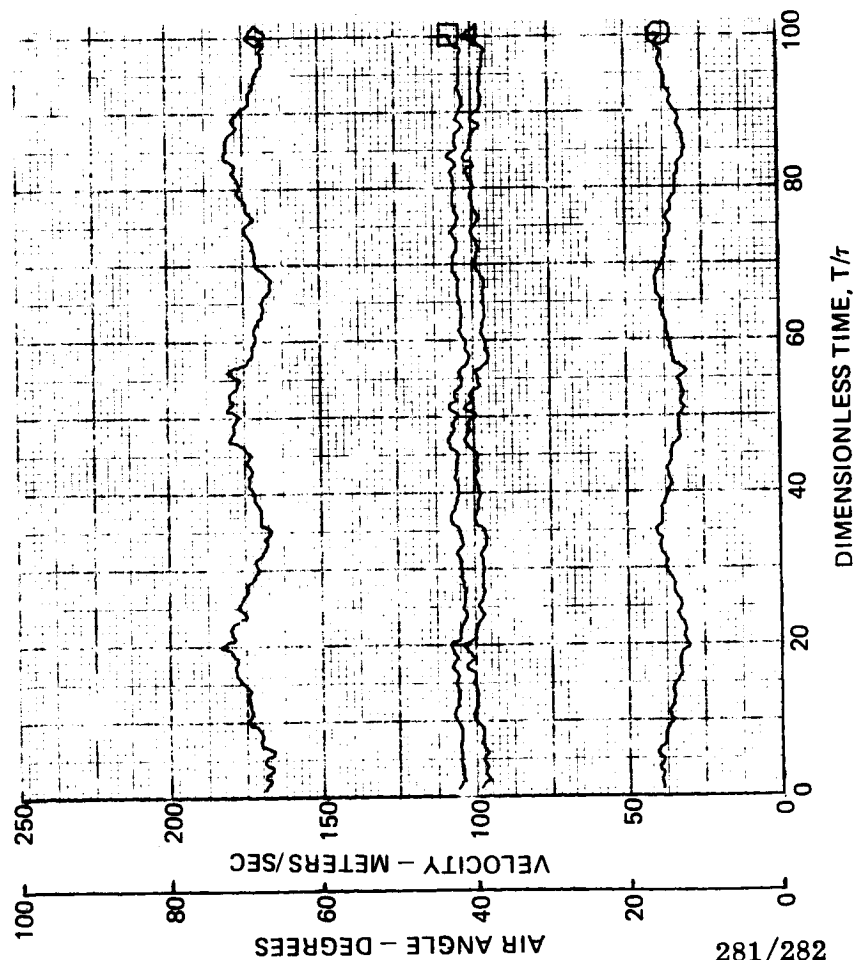


FIGURE E-20. FLUCTUATING VELOCITY PROFILES FOR FLOW CONDITION III

SPAN LOCATION - 95 PERCENT FROM ROOT

SYMBOL				
COMPONENT	RESULTANT VELOCITY	TANGENTIAL VELOCITY	AXIAL VELOCITY	AIR ANGLE

a) STATIONARY COORDINATE SYSTEM



b) ROTOR COORDINATE SYSTEM

